Aalto University
School of Arts, Design
and Architecture

# DESIGNING UNIFIED SERVICE ENCOUNTERS

## CASE OF OUTOTEC MAINTENANCE SERVICES

**Master's Thesis**
**Mikko Kutvonen**
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**Aalto University**
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Masters of Arts thesis abstract

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## Abstract

As service industry has experienced significant growth in past years, many manufacturing companies have integrated different kinds of service components to their offerings. As services are regarded inseparable and variable processes, the service encounters, where the customer directly interacts with the resources, and where ways of operation of the service provider are, critical to customer perceptions about the service and the service provider. There is a significant body of research about utilization of service design methodologies in service development. However, no specific studies have been made to understand service encounters in the context of industrial services and there is a research gap in studying this kind of atypical area. The purpose of this study is to examine critical factors affecting on satisfactory service encounters as a part of Outotec maintenance services. In addition the study aims to find out, how Outotec can develop service encounters by utilizing service design methodologies.

From the basis of the literature review, process dimension of services and service consumption model were recognized as major theoretical streams for analyzing maintenance services. Subsequently, these models were utilized for the basis of the empirical part of the study. To provide deeper understanding about service encounters, maintenance services were studied through participant observations and semi-structured interviews. Altogether five interviews and six participant observations were carried out during summer 2012.

The study provides a general view on how customer companies evaluate and assess service encounters and what they value the most. The results of this study show that customer companies assess and evaluate maintenance service as a process which leads to a successful outcome. In addition, together with expertise and social and interaction skills are perceived as critical factors of the overall service process. Therefore, maintenance service provider has to recognize interaction aspects in service encounters in order to truly obtain customer-centric approach. As practical service design contribution, new service guidelines handbook and illustrated customer journey map were proposed for Outotec to support in the maintenance service development and management. The new service handbook provides extensive instructions for managing customer-oriented service encounters and sets groundwork for performing repeating services routines within Outotec maintenance services.

**Keywords:** service, industrial services, service design, service encounters, servitization, manufacturing, customer journey

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## Tiivistelmä

Palveluteollisuus on kasvanut viime aikoina merkittävästi ja samanaikaisesti perinteiset teollisuusyritykset ovat täydentäneet yrityksen tarjoomaansa erilaisilla palveluaineksilla. Kirjallisuudessa palvelut on kuvattu subjektiivisesti koettuina ja samanaikaisesti tuotettavina prosesseina, joissa syntyy asiakkaan ja palveluntarjoajan välisiä vuorovaikutustilanteita. Nämä palvelukohtaamiset, jolloin asiakas on vuorovaikutuksessa palveluntarjoajan resurssien ja toimintatapojen kanssa ovat asiakkaan kokeman palvelun kannalta ratkaisevia. Etenkin palvelujen kehittämistä ja innovointia on tutkittu muotoilun näkökulmasta runsaasti. Palvelukohtaamisia ei kuitenkaan ole juuri tutkittu teollisten palvelujen kontekstissa ja tämän palvelumuotoilulle epätyypillisen toimintaympäristön tutkimus on tähän saakka ollut puutteellista. Tämän opinnäytetyön tavoitteena on tarkastella ratkaisevien tekijöiden vaikutusta tyydyttäviin palvelukohtaamisiin osana Outotecin tarjoamia kunnossapitopalveluja. Lisäksi tutkimuksessa käsitellään, kuinka Outotec onnistuu kehittämään palvelukohtaamisia palvelumuotoilun menetelmin.

Kirjallisuuskatsauksen perusteella palvelun prosessiluonne ja palvelun kulutusprosessi havaittiin kunnossapitopalvelujen kannalta keskeisiksi teoreettisiksi painopistealueiksi. Viitekehystä käytettiin tutkielman osana empiiriseen taustatutkimukseen, joiden kautta palvelukohtaamisia tarkasteltiin. Tutkimustietoa asiakaskohtaamisista osana kunnossapitopalveluja on hankittu hyödyntämällä puolistrukturoitua haastattelumenetelmää ja osallistavaa havainnointia. Tutkimuksen empiirinen aineisto kerättiin kesällä 2012 haastattelemalla viittä Outotecin asiakasyrityksen edustajaa sekä havainnoimalla kuutta erillistä kunnossapitopalvelua.

Tutkimus tarjoaa yleiskuvauksen miten asiakasyritys kokee palvelukohtaamiset teollisten kunnossapitopalvelujen yhteydessä. Tulokset osoittavat, että asiakasyritys kokee kunnossapitopalvelun lopputulokseen johtavana prosessina, jossa kenttähenkilökunnan ammattitaito sekä vuorovaikutteiset ja sosiaaliset taidot ovat ratkaisevia tekijöitä. Tutkimustuloksista voidaan havaita, että kunnossapitopalveluja tarjoavan teollisuusyrityksen on otettava huomioon vuorovaikutteiset palvelutapaamiset kyetäkseen toimimaan asiakaslähtöisesti. Lopuksi, tutkimuksen pohjalta laadittiin palvelukäsikirja sekä havainnollistava palvelupolkumalli tukemaan Outotecia kunnossapitopalvelujen kehittämisessä ja johtamisessa. Palvelukäsikirja tarjoaa tiedot asiakaslähtöisten palvelukohtaamisten hoitamiseen sekä toimii ohjenuorana toistuvien toimenpiteiden suoritukseen Outotecin kunnossapitopalveluiden yhteydessä.

**Avainsanat:** palvelu, teolliset palvelut, palvelumuotoilu, palvelukohtaamiset, palvelullistaminen, teollisuusyritykset, palvelupolku

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November 2012
**Mikko Kutvonen**

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# 1 INTRODUCTION

This first chapter presents the primary purpose and the objectives of this study. At first, the extant literature on the topic is briefly discussed. Next, the research gap and the design brief from the case company are explained. This is followed by an introduction of the research questions. After that, short introduction to the research methodology is provided. Then, definitions for key concepts are presented. Finally, the structure of this study is summarized in the end of this chapter.

The objective of this study is to investigate service encounters and their complexity within the mining and metallurgy industry. In simple terms, service encounters are situations in which the customer meets and interacts with the resources and ways of operation of the service provider. In doing so, the study specifically addresses, the consumption and process dimension of services from a theoretical viewpoint. Correspondingly, from the practical angle the purpose is to integrate customer journey on the consumption of technical maintenance services and investigate how service encounters can be developed. When it comes to customer journey, it has been commonly associated as one of human-centered service design methodologies. By identifying different service touchpoints, it illustrates the steps of the customer and the dimensions, where users interact with the service.

As the study was done in partnership with the technology company *Outotec*, the information relates particularly to Finland and South Africa, where empirical part of this study was conducted. The information aims to demonstrate why it is important to understand different encounters and how they are reflected to the service experience. What makes Outotec and maintenance services an interesting research area is that there is a strong correlation between the equipment and services. It can be also argued, that Outotec is highly suitable case company for studying service encounters in industrial services context, since the role of service business in the company has risen steadily in the past years. Also, there is a logical demand for new methodologies of service development which can further be leveraged to foster Outotec's strategic priorities.

## 1.1 Research background

For decades the importance of services to the global economy has grown steadily. At the moment the service sector plays a key role in OECD economies averaging 70 % of total value added to the total economic growth. Similarly services accounted about 70 % of total

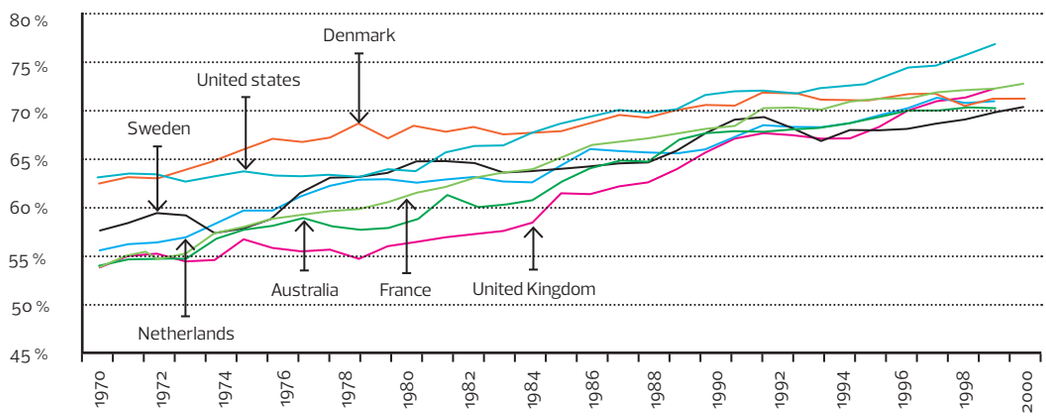


**Figure 1.** Value added shares of the service sector over time (in per cent) (Source: Wölfl, 2005).

employment on average across OECD countries (Wölfl, 2005). This growth is illustrated in Figure 1. For instance, in 2010 the role of services on Gross Domestic Product (GDP) in the United States was 77 % and in the Great Kingdom 78 % (The World Bank Group, 2011). As a response to this service dominated change in the economy, service design arise in 1990s to apply creative and human-centered design methodology and principles to the design of services (Holmlid & Evanson, 2008). By understanding the behaviour of people and the context through user-centered approach in service design is targeting to plan and shape desirable service experiences and all the details in the service (Moritz, 2005).
In a recent study from Etnoteam (2012) it was found out that companies are increasingly investing on developing the customer experience. A study also pointed out that 53% of respondent companies regard the customer experience as an integral part of their company. Moreover, it was also found out in the study that 18% companies had defined customer experience as one of their strategic objectives. Although this is not particularly surprising, it points out that companies are looking for a competitive advantage from the customer experience. Obviously, the tendency is that customer expectations are continuously raising and companies need to find out new concepts and methods in order to succeed in the competition.

As the service economy has grown over the years, many manufacturing companies have also moved dramatically to the service business by blurring boundaries between products and services. In order to maintain revenue streams and improve profitability, they provide increasingly integrated product-service offerings, by adapting more and more service components in their offering. In the literature this tendency is often conceptualized with the term servitization. This term refers to the increased offerings, of customer focused combinations of goods, services and support, which are created in an attempt to add value to the core product offerings, (Vandermerwe & Rada, 1988). Some examples of servitization in manufacturing companies are upgrades for old equipment, supporting maintenance services and spare parts for previously delivered equipment.

Simultaneously the provision has turned from physical goods to services with service elements becoming main differentiating factor and providing important competitive opportunity for manufacturing companies (Baines et al., 2009). In most industrial companies the after-sales business accounts for 10% to 20 % of revenues and much larger portion of total contribution margin (Knecht et al., 1993).

In this transitional phase, manufacturing companies are required to adapt to an overall shift from product-centered organization to customer-centric one (Galbraith, 2002). In practice, this means an intention to form a culture in a company, which directs all processes and activities toward providing superior value to the customer, in order sustain long-term profits (Joby, 2003). As this transition is challenging, it requires more service thinking as a potential driver for this transformation. At the same time, manufacturing companies are increasingly seeking service design tools and concepts to support their companies through this process and towards more customer focused approach to their services (Sangiorgi, 2012).

Since leveraging services provides balanced cash flows and makes manufacturing business less sensitive to economic fluctuations, there is a natural trend towards continuous, ongoing and close customer relationships. At the same time, prior service experiences are likely to influence on customer's service contract purchase and upgrading decisions (Bolton, et al, 2008). On this basis, two of the critical success factors of close customer relationships are carefully designed and implemented service encounters. For manufacturing company, this means re-thinking their day-to-day activities with the customer companies and ability to configure the structure of the interaction in every step of the service journey.

## 1.2 Research gap

In the mining and metallurgy industry, customer's consumption process of maintenance services consists of dozens of service encounters varying from telephone conversations to face-to-face interactions. Together these service encounters constitute so called "moments of truth" where the quality perceived by the customer is created and promises are fulfilled or neglected. Despite the literature associated with service design and service marketing, there is no earlier study focusing exactly on investigating service encounters within industrial maintenance services. Also, what lacks in the prior studies is a distinct consideration of the conjunction of the service consumption process and documentation of the customer journey. Moreover, little is known about how service encounters should be managed and standardized in order to ensure consistent and unified service delivery. As a consequence, service encounters should be explicitly studied as they are, in order to retain trusted customer relationship. Thus, in this study my aim is to explore these aspects, while I try to explain maintenance service process in the context of the mining metallurgy industry.

## 1.3 The design brief

In this study, my role as a designer is to develop a concept for managing the service encounters in the customer interface. The need is derived from the problem, that there are significant amount of variance in the service encounters between the customer and Outotec. As a response, there is a need for a study and a new standardized service development concept for managing service encounters. In this sense, the theoretical part of the study is conducted through a design perspective. Moreover, to provide sensible and credible analysis, literature review is intentionally expanded to business perspective by taking service marketing and management theories into consideration throughout the process. Also, the analysis and observation of the maintenance service process is based on customer orientation and design sensibilities, in order to recognize how customers perceive the maintenance service. Since Outotec recognizes five principles of service design thinking; user-centered, co-creative, sequencing, evidencing, and holistic (Stickdorn & Schneider, 2010), my role is to investigate how service encounters can be improved and standardized. This is very much in line with Morelli's (2002) statement that abilities of a design discipline such as understanding users' cultural frames and representing immaterial aspects of service behavior are activities that can take advantage in service development. In addition, Service design manifesto (2005) adds that service designer visualizes, expresses and choreographs what other people cannot see.

## 1.4 Research objectives and questions

By addressing these themes from service design and services marketing perspectives, this study attempts to increase understanding about consumption of the industrial services and how service encounters can be improved when it comes to service design tools.

As my aim in this study is to understand service encounters my key research questions are:

**Research question 1:** How could Outotec unify their practices and processes during service encounters through customer journey mapping?

**Research question 2:** What are the critical and satisfactory components in frequent service encounters within Outotec maintenance services?

**Research question 3:** How could Outotec develop the way of frequent service encounters by utilizing customer journey mapping as a service design tool?

## 1.5 Research methodology

The study is an exploratory qualitative research targeting to capture service encounters in

the mining and metallurgy industry. As the emphasis of this study is on service encounters, the concept of the service encounters is here borrowed from Shostack (1985) describing "period of time when customer interacts with the service". In order to gain evidence from service encounters in real world, a case study approach was utilized. The qualitative research was established on fieldworks consisting of six participatory observations and five semi-structured interviews with Outotec's typical customers. Content analysis was implemented to analyze empirical data and explain research issues.

The empirical part of this study was carried out in two parallel stages. In order to provide multiculturally relevant data, the empirical part was carried out in two different market areas: Finland and South Africa. The first phase involved undertaking participant observation to gain deeper understanding about service encounters within maintenance service. To supplement the findings, the second stage included semi-structured interviews conducted with regular customers of Outotec.

## 1.6 Limitations of the study

This study analyses service encounters from the viewpoint of the customer. In the empirical part, the study is focusing on maintenance services in context of the mining and metallurgy industry. While some of the results and assumptions can be generalized, it is important to understand, that the area of industrial services is considerably comprehensive consisting modernization, operation and maintenance, upgrades, shutdowns and technical services. Correspondingly, the area of service design methodologies and practices is very heterogenic. Thus most of the creative and co-creational service design methods were left out of the scope, in order to limit the attributes and balance the research load.
In this study, the emphasis is on interactive part of the maintenance services. In contrast, it is recognized here that invisible parts such as staffing and technology of the services are integral part of effective maintenance service. However, in determining the scope and the objective of the study it was decided that supporting back-stage activities and functions as well as invisible parts of service organization were not taken into account in this study although they could influence the result.

## 1.7 Definition of key concepts

As the focus on this research is in maintenance services in mining and metallurgy context, this study follows dualistic approach involving two central parties around buyer-seller relationship. Here, brief definitions of key concepts used in this study are presented in order to avoid any misunderstandings.

**Customer**
Customer is the recipient of Outotec maintenance services. As an external organization, customer is not an internal part of the organization of Outotec.

**Customer journey**
Customer journey is a service design tool used to gain understanding of the service process from customer perspective and how to assess and perceive it. Consequently, customer journeys have been utilized to evaluate service interactions between customers and service providers, when improving services (Stickdorn & Schneider, 2010).

**Maintenance services**
Maintenance service is a technical service type provided by the Outotec targeting for uninterrupted operation of equipment, minimizing the unexpected production stops, and maximizing the lifetime of the equipment. Commonly, maintenance service is tailored for each specific piece of process equipment and carried out in different intervals (Outotec, 2012a).

**Service encounter**
Service encounter refers to a moment when customer interacts with the service. On this period of time service provider has the opportunity to demonstrate the quality of its service to the customer (Grönroos, 2007). In this study service encounter definition extends to include all kind of encounters between customer and service provider.

**Service technician**
Service technician is a person who is in direct contact with the customer throughout the entire maintenance service.

**Service visit**
Service visit means a periodic visit, which takes place in the customer's facility for reasons of delivering Outotec service.

**Site**
Site is a customer facility, which can be a concentrator plant, a smelting plant, a refinery or a combination of these facilities.

## 1.8 Structure of the study

This study is divided into seven chapters. Following this introductory section the study is arranged as follows. At first, chapter 2 explores extant literature for this study by addressing services process and service encounters as a critical aspect of the service experience. Then, chapter 3 summarizes the theoretical part and presents the theoretical framework based on a literature review. Chapter 4 establishes an understanding about technical maintenance services in the mining and metallurgy industry. Chapter 5 focuses on issues related to the research methodology and introduce the case company. Consequently, chapter 6 focuses on the empirical part of the study and how the data was

collected. Following this, chapter 7 discusses about the research findings and introduces practical contributions of the study. Finally, chapter 8 draws the conclusions from the preceding chapters and suggesting managerial implication, and some directions for future research on this area.

# 2 LITERATURE REVIEW

This chapter presents the theoretical groundwork for understanding the principal concepts of the study. The chapter begins with exploring process dimensions of services and service consumption model. After that, the importance of service encounters is described. Then the conceptualization of service offering is explained. This is followed by an overview of service design and customer journey as service design methodologies.

## 2.1 Defining services

Service marketing and service design literature provides many definitions of services. Parasuman et al. (1985) suggest that services are performances rather than objects. In the other hand Vargo & Lusch (2004) provide a definition "*services as the application of specialized competences (covering knowledge and skills) through deeds, processes and performances for the benefit of another entity or the entity itself.*"

Grönroos (2007) pay attention on interaction by defining service as "*a process consisting of a series of more or less intangible activities that normally, but not necessarily always, take place in interactions between the customer and service employee and/or physical resources of goods and/or systems of the service provider, which are provided as solutions to customer problems.*"

On the contrary, Wilson et al. (2008) also follow process dimension by stating that "*services are deeds, processes and performances*".

Interestingly Lovelock (2007) provides a quite complex definition emphasizing exchange as the central phenomenon. "*Services are economic activities offered by one party to another. Most commonly employed time-based performances to bring out desired results in recipients themselves or in objects or other assets for which purchasers have responsibility. In exchange to their money, time, and effort, service customers expect to obtain value from access goods, labor, professional skills, facilities, networks, and systems; but they do not normally take the ownership of any of the physical elements involved.*"

Usually services are also compared with physical products. However, this is not a very fruitful way of developing service models, because especially the industrial services are more or less dependent on physical equipment or install base. Cusumano et al. (2006) discuss that services provided by a manufacturing companies are usually complimentary activities assisting in support of adoption of the core product or to enhance the core product.

Rising from the discussion above it can be agreed that services are processes consisting

frequent interaction and various characteristics. As the emphasis in this study is on interpersonal interaction and service process, the definition of services to benefit this study is adopted from Grönroos (2007): "*A service is a process consisting of a series of intangible or tangible activities targeting for solution outcome through simultaneous production and consumption.*" This definition outline well enough the service characteristics of the maintenance services such as the significant degree of ongoing interaction and frequent phases on the overall service consumption.

## 2.2 Characteristics of services

There is a significant body of research dealing with characteristics of services. In the services marketing literature scholars have frequently described services by four key characteristics: intangibility, diversity, perishability and inseparability. Commonly, these characteristics are being used to highlight differences in the nature of services versus products and to explain special challenges for service marketers and designers. Despite, that there has been a debate a on the effectiveness of the four characteristics, they are more or less widely accepted by the scholars and marketers (Lovelock, 2004).

Scholars have identified three more or less generic characteristics of services. Parasuman et al. (1985) suggest the three general characteristics for services, which are:

**Intangibility**
Services are an activity rather than a thing. Thus, most services cannot be seen, touched or held because they lack a physical existence of form. Because of the intangibility, service provider may find it difficult to understand how customers perceive their services and service quality (Parasuman et al., 1985). To help the customer to assess the intangible services, service provided may respond by adopting tactics of demonstrating degrees, certifications and references or adding tangibility through physical evidence such as paperwork, uniforms and interior design of the facility (Fisk et al., 2008).

**Heterogeneity**
Services often rely on human performances and production processes. In other words, no two service provisions are exactly the same and the service quality varies from service provider to service provider. This variability of services makes it challenging to standardize the service performance. On this basis, service organization needs to train its personnel to facilitate positive service encounters (Fisk et al., 2008). Interestingly Kasper et al. (2006) continued the heterogeneity approach. The authors argue that service provider needs to also pay attention on the service environment in order to help to facilitate appropriate customer involvement in the service production process.

**Inseparability**
For the most services production and consumption of the service occurs simultaneously.

Thus, the characteristic of inseparability is the primary source of interactivity. Simultaneous consumption and production makes it difficult to separate the service from the service provider (Parasuman et al., 1985). Therefore, service marketer has to be able to manage the customer's role in the interaction for the service to be delivered effectively and efficiently (Fisk, et al., 2008).

In addition Baron & Harris (2003) among others have identified:

**Perishability**
Unlike physical goods, services cannot normally be stored before consumption. In this sense they only exist at the time of their production (Baron & Harris, 2003). Service provider needs to be able to forecast production capacity and to manage supply and demand (Fisk et al., 2008).

Based on the discussion above, the conclusion is that services have various characteristics. Simultaneous consumption and production of maintenance service is evident in the mining and metallurgy industry. Similarly, since maintenance activities are seldom generic and reproducible, it is also clear that service performance is heterogenic. It is also noteworthy, that the customer begins to use the maintenance service well before the actual maintenance service work takes place.

## 2.3 Service triangle

As the services are produced and consumed simultaneously, customers are an integral part of the service performance. According to Fitzsimmons & Fitzsimmons (2008) each encounter in the service process involves interaction between a customer and a service provider and both have a role to play in an environment staged by the service organization (Fitzsimmons & Fitzsimmons, 2008). In service marketing literature, the encounter between the customer and the service technician during the interaction is often presented on the service triangle or service triad as illustrated in the Figure 2. Conceptually, employees interacting directly with customers are regarded as customer contact employees or front-stage employees. The service company is placed at the top of the triangle, whereas customer and service employees are placed on an equal level. On this basis service technicians deliver, control and market their service, and the customer takes part in the production process (Teboul, 2006). Altogether these actors formulate a dual partnership surrounding the service: the customer on one side, and service employees on the other side. It goes without saying that success of a service company depends on its ability to develop a satisfactory relationship with the customer. In doing so the service company is able to retain its customers but also sell them more services (Teboul, 2006).

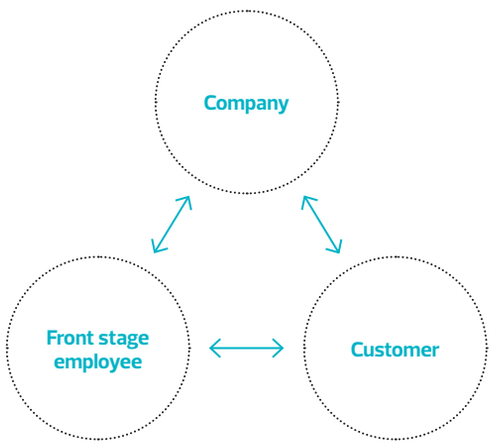


**Figure 2.** Service triangle (Source: Teboul, 2006).

## 2.4 Services as process

As conceptualized by Lovelock (2000), services can be defined as processes or performance rather than a physical thing. Earlier, Edvardsson & Olsson (1996) have also underlined, that to be commercially successful, service process must always lead to a customer outcome, which has sufficiently added value for the customer. Consequently, these defined process outcomes have to become the basis for the customer experience (Sawhney et al., 2004). Considering this, Grönroos (2007) discusses about the importance of process dimension of services. He defines services as processes consisting of a series of more or less intangible activities, which are provided as solutions to customer problems. According to Grönroos (2007) these processes often but not always take place in interactions between the customer and service employees as well as physical resources of goods and/or systems of the service provider. Similarly, Bitner et al. (2007) also emphasize the process perspective by describing services as processes and experiences, which are dependent on human and interpersonal delivery systems. Gliatis & Minis (2007) suggest that service is a sequence of processes and each of these processes generates a different value for the service. Koivisto (2009) also follows the process viewpoint. According to him processes and procedures determine how the service is produced and experienced. Interestingly, Saffer (2007) highlights that the service does not come alive until people use the service and go through each step of the service. Miettinen (2009) highlights that consuming a service can be viewed to be a consumption of experience, a process that extends over time. Fundamentally the process itself is about applying individual and organizational resources and especially specialized skills and knowledge (Vargo & Lusch, 2004b). In other words, as an output organizational competences are being applied through these processes from service provider to customer. Figure 3 illustrates service process in a very simple way.

Service delivery and operating systems are an essential part of service process. According to Wilson (2008) the actual procedures, mechanisms and flow of activities establish the service process. Therefore, service design needs to focus on processes, delivery, experiences and innovation in order to integrate customer focus across the service process. Bitner (2007) writes that services are fluid and dynamic and frequently co-produced in real time by the customers and technology, often with few static physical properties. Fundamentally, the focus should be on processes and experiences when designing services (Bitner et al. 2007). In contrast, Stickdorn & Schneider (2010) argues that the customer focus should be in focal role in the service design and therefore it is important to gather adequate knowledge about who customers truly are. In other words, what are the key success factors for the service and what kind of behavior patterns and areas of interest can be recognized? Subsequently, Koivisto (2009) argues that when service is seen from the users' perspective new ways, such as customer journey of structuring services are needed.


**Figure 3.** Service delivery process (Source: Koivisto, 2009).

## 2.5 The service consumption process

Based on the assumption that service is a process characterized by simultaneous consumption and production and significant degree of interaction, Lehtinen (1986) proposes that the service process can be incorporated into the consumption process. According to Lehtinen (1986) the service consumption process can be divided into three phases: (1) the joining phase, (2) the intensive phase, and (3) the detachment phase. In the Figure 4 the service consumption process and types of services related to the different phases are illustrated schematically.

The joining phase is the first stage of the consumption process. The customer joins in the service production process and uses few peripheral services, which are necessities for him/her in order to join the process. It should be noted that in business-to-business context extensive organizational buying process takes place before actual joining phase in the service consumption process (Johnston & Levin, 1996). The intensive phase is the main stage of the total service consumption process. The length of the consumption phase can vary depending on the industry in which the service provider is operating. Particularly in this phase the service provided has to be able to satisfy the customer (Grönroos, 2007).

In the detachment phase the customer leaves the service process. According to Grönroos (2007) this often requires some kind of enabling service. In the context of Outotec maintenance services customer support engineer fills an inspection report and delivers it over to the customer representative.

As recognizing the consumption process above, it is important to consider when does the service actually begin and end for the customer. Joby (2003) claims, that to take truly a systematic approach to managing the customer, the service provider has to identify all the activities that the customer conducts in the service consumption process. Likewise, to be a truly customer-oriented, service organization has to also examine, what the customer sees and experiences to determine whether the service delivery at the service encounter is contributing to or detracting from customer value (Joby, 2003). Thus, depending on the service, certain encounters with the service provider may be more important from customers' perspective and consequently the service process is not the same for all customers (Baron & Harris, 2003). Due of this heterogeneity in the service process it is possible to customize the service for different customer segments.

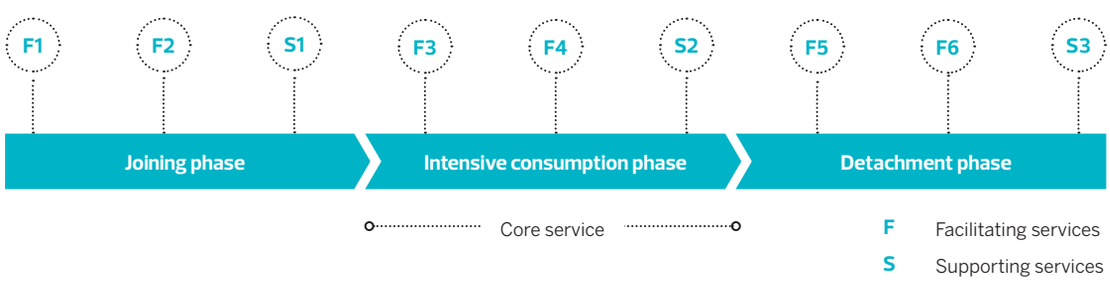


**Figure 4.** The service consumption process (Source: Lehtinen, 1986).

## 2.6 Service interface

A focal component related to service process is the service interface. According to Moritz (2005) service journey including set of touchpoints establishes a service interface (Moritz, 2005). Meroni et al. (2011) follow on Pacenti (1998) by describing the service interface as a tangible and visible part of a service, which the user can experience. Holmlid (2005) sees the service interface as a metaphor for service touchpoint and argues that it is more enabling to use that term in service design, since it includes interaction, communication and experiences. Furthermore, Meroni et al. (2011) state that the service interface has two roles. Firstly, the service interface supports and orients the interaction. Secondly, the service interface delivers service identity and values. In this sense, the service interface should be viewed as a pattern which is derived from various interactions that customer has with the service provider. Service interface is established overtime and fundamentally it is the platform for the service experience (Meroni et al., 2011). On an essence, Secomandi &

Snelders (2011) argue, that service interface is crucial for service design. This is ultimately, because service interface bring new services into being. Figure 5 illustrates, in simplified way the how service interface is interlinked between the customer and service provider.

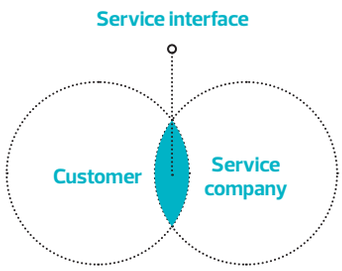


**Figure 5.** Service interface (Source: adopted from Moritz, 2005).

## 2.7 Service encounters

Most services are characterized by an encounter between a service provider and a customer (Fitzsimmons & Fitzsimmons, 2008). This situation in which the customer confronts the service, its resources and ways of operation is recognized as critical components of service quality (Normann, 2002). These buyer-seller interactions, which the involve all activities in service delivery process, are often being described as service encounters. Shostack (1985) defines the service encounter broadly as the period of time during which customer directly interacts with a service. This definition involves all aspects of the service provider with which the customer may interact. For instance these could include personnel, physical facilities and other visible elements.

Baron & Harris (2003) also draw attention on the significance of common characteristics of services on service encounters. Authors state that service encounters are more or less frequent in the service process because of the simultaneous consumption and production of services. In addition, as services have heterogeneity, there are differences in customer perceptions of service encounters. Finally, because services lack a physical existence of form, tangible aspects become important as the customers meet physical surroundings and equipment during different service encounters.

According Jayawardhena (2007) service encounters are purposeful and take place to achieve a specific goal. Based on the assumption of inseparability Solomon (1985) writes that service encounters are transactional interactions in which one person such as a service representative provides a service to another person or organization. Many of these service situations, especially those termed so-called “pure” services, are characterized by a high degree of person-to-person interaction. Considering interpersonal communication, there are many different communicative acts that take place in the service encounters such as greetings, service requests and offers. Although interpersonal communication plays

essential role in service encounters, these can occur also without any human or face-to-face interaction elements (Solomon, 1985).

In many instances customer encounters are also being discussed with a concept 'moments of truth'. This term was introduced into the service management literature by Richard Normann in 1984 and later popularized by Carlzon in 1989. According to Normann (2002) the perceived quality of the service is realized when the customer and the service provider confront each other since most or all of the technical quality of the outcome is transferred to the customer through these buyer-seller interactions. During these social acts the customer and the service provider are very much on their own and they cannot be influenced directly by the company. In a response the service encounters determine the level of functional quality (Normann, 2002).

In respect to Normann (2002), Grönroos (2007) explains that the concept 'moments of truth' is a situation bound in time and space when the service provider has the opportunity to demonstrate the quality of their service to the customer. In this sense, moments of truth should also be simultaneously regarded as 'moments of opportunity' (Grönroos, 2007). Jayawardhena et al. (2007) have found that the quality of a service encounter as perceived by the customer in business-to-business context is defined by four different dimensions: professionalism, civility, friendliness, and competence. Parker & Heapy (2006) also refer on service encounters by saying that service needs to be understood as a cycle, consisting of a series of critical encounters that taking place over time and across channels.

In service marketing perspective, scholars have found that satisfactory service encounters can bring several assets on-board. Chandon et al. (2004) argues that good service encounters may give companies a competitive edge and will most likely result in repeat purchases and positive word of mouth (Chandon et al. 1996). Chung-Herrera et al. (2004) have recognized the value of the frontline staff in service encounters. The authors write that since frontline employees are often the primary point of contact; before, during and after they play a strategic role in value creating activities (Chung-Herrera et al., 2004). Salomon (1985) states that unique interaction between the customer and the service provider can help to distinguish one service organization from another. This is relevant to service encounters, since these moments are shaped by individual behavior and the customer-service provider interactions (Bitner et al. 1990). Czepiel et al. (1985) suggest that service encounters are role performances in which both customers and the service provider have roles to enact. These roles, played during service encounters by the service provider and the customer, are generally well understood by both organizational parties. Following this, Solomon et al, (1985) follow Shostack (1977) and argue that all personnel involved in the customer contact should be viewed as marketers, since each individual representing the firm defines the product and promotes it directly to the customer. Similarly, Salomonson et al. (2011) highlight that each customer interaction is an important episode on rendering a long-term relationship. Therefore front-stage communicative aspect should be taken into consideration especially in training front-stage service employees.

Kasper et al. (2006) pointed out that service encounters offer an opportunity for the service technicians and the customers to start building relationship with one another through interaction. It is worth noting that building these relationships is important for several reasons. First they offer an opportunity to learn about other actors' wishes, preferences, capabilities and opportunities. According to authors, this may enhance the knowledge of the expectations about the other party involved in the interaction. Subsequently, existing relationships may function as means to maintain relations with the customer and cultivate loyalty. On the contrary dissatisfactory service encounters may function as a catalyst to switch the service provider. Thus, understanding relationship management on service encounters becomes necessity for understanding how to manage a service company in the competition in service industry (Grönroos, 2007).

Based on the discussion above, it is noteworthy that maintenance service consumption is not restricted to service work activities. Depending on the service encounters, the customer starts consuming the service well before the actual maintenance service work takes place. Similarly, maintenance service is not completed until post operational activities are carried out. Following this, different service encounters taking place throughout the service process in other words before, during and after are critical components of the overall service experience.

## 2.8 The service offering

Here, the conceptualization of the service offering is explained insofar as it extends understanding of the process related features of services. Especially from the service management and marketing perspective it is important to remember that all service models and concepts are based on the fact that the service emerges in a process. Thus, the most critical part of the service is produced at the time, when the customer participates as a co-producer and perceives and evaluates the service process.

### 2.8.1 The service package

Baron & Harris (2003) among others have conceptualized the service package model to describe bundle of different services; tangibles and intangibles, which together form the service. The package is divided into two main categories: the main service or core service and auxiliary services, sometimes also referred as peripheral services. The core service is the necessary output of the service organization, which provides intangible output for customers needs in target markets. In turn, the peripheral elements are those, which improve the quality of service bundle (Baron & Harris, 2003). Although this model is a simple and a realistic way to illustrate the nature of any service, on conceptual level the service package model has some significant weaknesses. Mostly, because it does not determine how the process related features should be handled and how customers recognize the interactions with the service provider (Grönroos, 2007). Since services are

consumed simultaneously in an interactive process, service package has to be expanded to a more comprehensive augmented service offering model (Grönroos, 2007).

### 2.8.2 Augmented service offering

As described above, the core service is the reason for a company for being on the market. To accomplish the core service some additional supplementary services are often required. Such additional services are enabling facilitating services. Enabling services are mandatory, because they facilitate the use of core service and if they are lacking the core service cannot be consumed. In turn, enhancing services or auxiliary services are used for competition and increasing the value of the service. Instead of facilitating the consumption or use of the core service, enhancing services help differentiating the service from other competitors (Grönroos, 2007). However, it is worth noting, that enhancing services cannot never fully compensate a failure in the core service. In other words, if the service company fails to offer good core service, it is more likely that the service company will not receive high value from its customers (Sureschandar et al., 2002).

As services are produced and consumed in an interactive process, the impact of how customers perceive this process has to be taken into account (Koivisto, 2009). This process consists of three components: accessibility of the service, interaction with the service organization and customer participation. When these components are combined with the basic service package, the augmented service offering can be conceptualized (Grönroos, 2007).

Finally, in the augmented service offering the service concept itself determines the intentions of the organization, which can be regarded as an umbrella concept, to guide development of the augmented service offering. According to Edvardsson & Olsson (1996) the service concept covers both the description of the needs of the customers to be satisfied and supporting services. More precisely, the service concept is a detailed description of what is to be done for the customer and how this is to be achieved. In other words, the service concept should state what kind of core service and enabling as well as enhancing services are to be used. Similarly comprehensive and customer-oriented service concept should recognize basic characteristics of the service and describe how the basic package could be made accessible, how interactions are to be developed and how customer should be prepared to participate in the service process (Grönroos, 2007). In figure 5 different dimensions and their correlation to the service elements are illustrated.

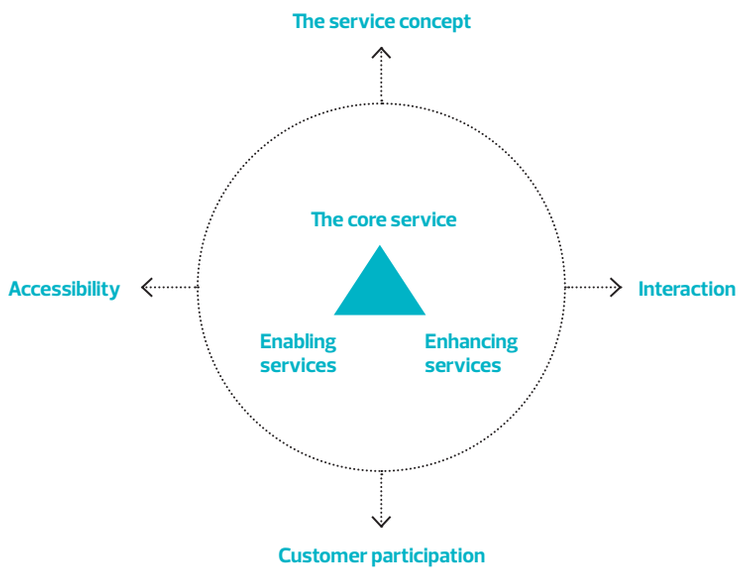


**Figure 6.** The augmented service offering (Source: Grönroos, 2007).

## 2.9 What is service design?

### 2.9.1 Background

Traditionally design has been associated with shaping tangible artifacts (Meroni & Sangiorgi, 2011) and to the idea of styling and product cosmetics (Mager, 2009). However during past decades the role of designer has evolved dramatically from industrial design to the design of entire end-user experience and company vision to the market launch of the product (Valtonen, 2007). Simultaneously with this tendency, design as a discipline has also moved from tangible questions to intangible questions such as experiences and services (Meroni & Sangiorgi, 2011).

As a discipline service design has been mainly developed and evolved from interaction design (Holmlid, 2005). Therefore, also service design should be regarded as one of the evolutionary extensions of product design (Koskinen, 2011). According to Koskinen the term interaction design has derived from developing graphic user interfaces (GUI), where user experience is one of the driving factors. Since its establishment in 1990s, interaction design has been concerned about interaction between people, devices and systems as well as improving usability and experiences (Koskinen, 2011). As the needs and desires of the users are important constitutes of interaction design, user involvement and participation plays a fundamental role in interaction design (Moggridge, 2006). Similarly, user involvement is also in a central role in service design in order to design usable interactions and experiences for digital artifacts and online presence (Moggridge,

2006).

### 2.9.2 Definition of service design

Based on the literature there is no one definitive conceptualization of service design. In broad terms, Moritz (2005) has defined, that service design is the design of overall experience of a service as well as the design of processes and strategy to provide service. Further, service design is about planning and shaping useful, usable, desirable, effective and efficient services experiences (Moritz, 2005). Maffei et al. (2005) pay attention to interaction dimension of service design. They claim, that interactions between a customer and a service provider are main areas for experience, interface and identity design. Similarly, Moggridge (2006) suggests, that service design targets for usable interactions and experiences especially in the case of digital artifacts and online presence. More precisely, service design addresses, that service interfaces are useful, usable and desirable from the customer point of view and oppositely effective and efficient from the service providers' point of view (Mager, 2009.) Correspondingly, service design is also concerned applying design methodologies and principles to the design of services (Holmlid & Evanson, 2008). Similarly, Stickdorn & Schneider (2010) also points out, that service design is an interdisciplinary approach, which combines different methods and tools from various disciplines. Interestingly, Koskinen (2011) argues, that service design is a part of developing an organizational service brand. Finally, Holmlid (2007) points out that service design should be regarded in the context of service development, management and operations and marketing, rather than viewing service design in isolation. According to Holmlid (2007) together all these disciplines constitute the prerequisites for good service performance.

According to Holmlid & Evanson (2008) customer/user should always be the starting point in a specific service. Mager (2009) follows similar logic by explaining, that service design addresses the functionality and form of services from the perspective of the user. Furthermore, service design is rooted in a human-centered approach targeting to understand and/or influence the behavior of people. According to Buchanan (2001) this human-centered approach equals for supporting human dignity in social, economic, political and cultural circumstances. Subsequently, service design should be regarded as a way to plan and create actions, services and all of the other humanly shaped process in the public and private life (Buchanan, 2001).

According to Meroni (2011) design research and practice has been approaching services from two distinctive research streams: the interaction paradigm and the functional paradigm. The interaction paradigm focused on how services are performed. In doing so it has considered the interactive nature of its main focus by utilizing design methods and skills to improve the customer/user experience. Further, by focusing on interactive dimensions, service design has identified service experiences as a primary area for designing inventions. Oppositely, functional paradigm is concerned about strategies for

sustainable conduction and production. Meroni explains that functional paradigm strives to apply functional thinking to service development in order to reduce material troughput in the economy. The underlying hypothesis in functional paradigm is that it is possible to create offerings, which provide same level of performance as traditional ones, but using less material. Thus it is possible to have a lower environmental impact.

### 2.9.3 Key principles of service design

Mager (2009) has defined five common principles, which help to outline service design. These are (1) holistic view, (2) interdisciplinary, (3) co-creative work, (4) visual thinking and (5) radical approach. Mager (2009) writes that service design is holistic and is considered about systems and subsystems of relationships and interactions. Moreover, service design takes the context into consideration and recognizes that services are living systems. The work of service design can be also described to be interdisciplinary. Depending on the case, the phase and the objectives, different kind of specialists from different disciplines are often involved in the design process. Depending on the case these are for instance experts of marketing, business strategy and product development. Co-creation is also part of service design in two-folded way. Firstly, the customer and the service provider are typically integrated into the exploration and creation process. Secondly, co-creation is also concerned about the service offering, as the most of the service are co-produced simultaneously. Therefore, the objective of the service design is to integrate customers as active parts into the service delivery process and regarding them as active partners and co-creators of value as Vargo & Lusch (2004a) suggest. According to Mager (2009), service designers think and work visually. Throughout all the phases of process the ideas are typically transformed into visible or tangible dimensions such as storyboards, or rapid prototypes. Finally, a service designer himself should be radical, meaning, that the service designer should challenge the existing and be able to reframe the given brief. According to Mager, it is important for the service designer to recognize, that the outcome of the design process is not about minor decorative improvements. Therefore, service design should target for providing the opportunity to rethink and reinvent, if necessary (Mager, 2009). Together these five principles holistic view, interdisciplinary, co-creative work, visual thinking and radical approach constitute a special spirit, which encourage for change.

### 2.9.4 Service design tools and methodologies

As explained above one of the common characteristics for service design is utilization of design tools and methods for service innovation. According to Miettinen (2009), these tools for developing desirable user-centered solutions are adopted from various fields such as social science, business and technology. Subsequently, there is a great variety of different kinds of service design methodologies and tools. For instance Stickdorn &

Schneider (2010) has described altogether 25 different kind of user-centered approaches, which can be utilized in developing services. Similarly on the Service Design Tools website 40 different service design tools varying from customer journeys to rough prototyping are introduced (Service Design Tools, 2012). Respectively, designer can be considered also as a facilitator, since his/hers responsibility is to choose and leverage the most appropriate tools and methodologies in the given commission. However, it is important to notify, that there is no real right or wrong way to employ service design tools (Stickdorn & Schneider, 2010). Instead, a successful project involves finding a workable combination, which can be utilized to conceptualize, develop and prototype ideas through an iterative process towards gradual improvement.

## 2.10 Customer journey as a service design tool

Although the concept customer journey is well explored in the service design literature and textbooks, there is no exact definition of what customer journey is. Contrary to the service process, service scholars and practitioners have described customer journey as an oriented graph, which represent the actual experiences and the service journey of a service user. According to Koivisto (2009) this journey is formed both by the service provider's explicit actions as well as by the customer's choices. Mager (2009b) also follows similar reasoning by stating that customer journey is a way to understand different factors behind customer, needs, expectations and experience.

As a service design tool, customer journey has been incorporated with other service design methodologies and practices targeting to gain rich understanding of the service user and the service experiences and expectations. Mager (2009a) highlights that in order to define better understanding about the particular service, it is essential to define the customer journey. Koivisto (2009) argues that when service is seen from the user's perspective new ways of structuring services such as the customer journey are needed. In contrast Stickdorn & Schneider (2010) highlight that gathering user insights is needed in order to construct the customer journey. The authors have also developed the customer journey canves to support service design efforts (Appendix 1).

The common denominator of most customer journey definitions is customer or user orientation. Maffei et al. (2005) write that customer journey emphasizes the different interaction modes of the user, paths and choices during the service process. Similarly Hämäläinen & Lammi (2009) argue that the main focus on illustrating the customer journey is on the customer experience and the service process in usage situations. Holmlid & Evanson (2008) highlight that it is crucial to walk in the customer's shoes in order to understand and experience the customer journey. Koivisto (2009) views customer journey as one of the service design concepts that puts users of the service at the center of the design process. Interestingly, Koivisto (2009) emphasize that customer journey is concerned that customer makes their own choices based on their needs and behavior during the service process. Fundamentally this follows service dominant logic

argumentation by the Vargo & Lusch (2004) where customers are being seen as co-creators of the service and value itself.

There is also significant amount of references of the holistic dimension of the customer journey. Miettinen (2009) follows Mager (2009a) by underlining that customer journey aims also to describe the phases before and after the actual interaction with the service. Miettinen (2009) suggests that different touchpoints between a customer and a service provider should be structured, with a regard to the process perspective, into a pre-service, service and post-service period. Therefore, it is important to decide the starting and stopping point of the service, while designing a customer journey. Hämäläinen & Lammi (2009) who also look to the holistic perspective of service, highlight that mapping of customer journey should pay direct attention to the whole service design process instead of details.

On practical sense, there is also lot of real life evidence of utilization of the customer journey in service development. Customer journeys have been used in tourism (Stickdorn & Schneider, 2010) and in public sector (Lane, 2007). In service design customer journey maps have been used to evaluate service interactions. When improving services, customer journey mapping has been utilized to determining of the service as the customer experience it and gain a richer understanding of a customer's perspective on service interactions and organizations (Spraragen & Hickey 2011).

### 2.10.1 Service touchpoint

Together service touchpoints formulate a focal constitute in the overall service process. In broad terms a touchpoint is a contact point where users interact with the service (Stickdorn & Schneider, 2010). Moritz (2005) defines a service touchpoint as a contact point with one of the elements of the service offering. Similarly, Moggridge (2007) explains that service touchpoints are the tangibles that constitute the total experience of using a service. Following this touchpoints can take many forms from advertising to personal cards, online interactions, mobile phone and PC interfaces, bills, retail shops, call centers and customer representatives. Mager (2009a) follows similar logic, when writing about service moments. He explains that the service is based on a set of discrete moments, when both service production and a set of interactions take place. These service moments consist of dozens of touchpoints covering people, processes and physical cues as well as other affecting human senses; sight, smell, taste, touch and hearing. According to Koivisto (2009) these can further be separated into four categories: (1) channels, (2) objects, (3) processes and procedures, and (4) people.

Channels are environments and places where the visible part of the service production takes place. Following this, channels can be physical (e.g. airline lounge), digital (e.g. internet) or intangible (e.g. phone service) and in a single channel customer confronts many different touchpoints. Regarding this, services are often multichannel customer experiences produced through different channels, for instance website on

Internet, physical environment or even email messaging and/or phone conversation. In contrast objects are things or machines that the service personnel use and which are simultaneously visible to the customer. This way objects also contribute to the customer's service experience. Processes and procedures determine how the service is produced and experienced on a single service moment. Subsequently, these processes from functions of user interface to the greetings of the service technicians can all be determined by the smallest detail. Similarly smallest details regarded as service gestures can have great impact on the customer experience. Conventionally people have a central role in service delivery. In this sense it is necessary to design suitable roles for both the customer as well as service technicians in order to ensure that service technicians are in the most useful and appropriate role. Considering the inseparability as a key characteristics of service, it is also important to take into account that to which extent service provider is responsible for service production and how much customer is responsible for it himself/herself (Koivisto, 2009).

Respectively Berry et al. (2006) explain that service touchpoints depend on experience clues in three forms: (1) functional clues, (2) mechanical clues and (3) human clues. Functional clues point to the technical quality of the offering. Correspondingly mechanical clues are relating to the nonhuman elements such as the design of the facility. Finally human clues come from the behavior and appearance of the service technician. Together different forms of experience clues constitute a total service experience that has a direct influence on the evaluation of the quality and the value of the service (Berry et al., 2006).

According to Moggridge (2007) in order to create consistent and unified service experience through different channels, each touchpoint should be regarded and designed in totality. Once the importance of each individual touchpoint is realized, every service moment can be designed to meet the strategy and the objective of the overall service (Koivisto, 2009).

### 2.10.2 Benefits of customer journey

Recognizing the user-centered approach, the customer journey can have consequences for the service design. Hämäläinen & Lammi (2009) highlight that modeling customer journey map can help the company to understand the service from the customer's perspective and gain a clear and more concrete sense of service encounters. In a response, this allows the company to locate critical points for improvement. Depending on the service, the service journey can be lengthened by adding new service moments, whereas problematic service moments can be improved to better meet customer needs (Hämäläinen & Lammi, 2009).

Hämäläinen & Lammi (2009) continue that illustrating a customer journey serves as a platform for discussions between customer and company representatives. Similarly presentations dealing with customer journeys are also useful in discussions with customers, business partners, and investors. Customer journey also enables objective

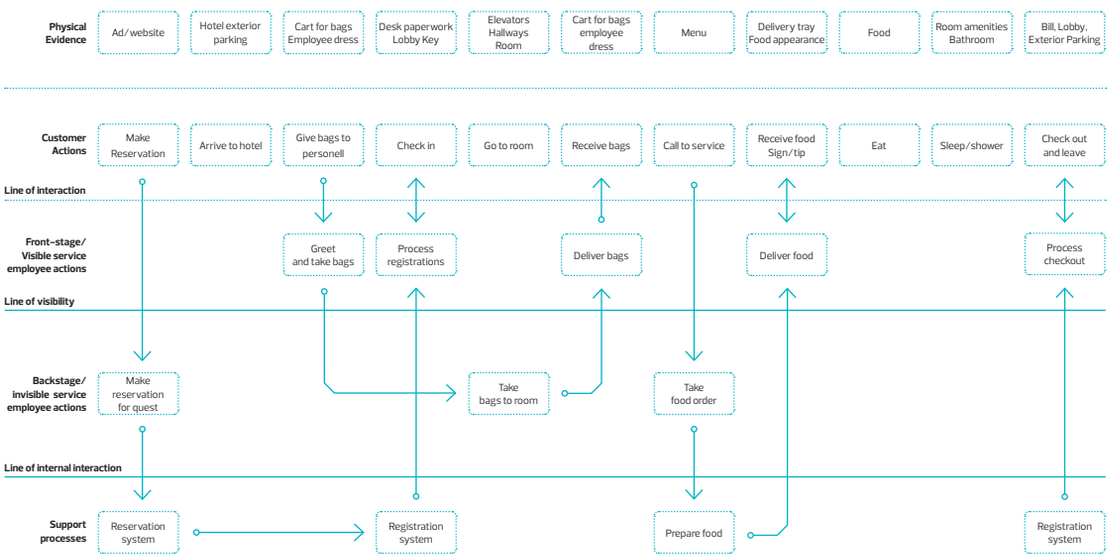


**Figure 7.** Service blueprint for hotel service (Source: Bitner et al., 2007).

evaluation of service development: What direction should service development take in the company? How will the company's line of business change in a few years? How far should the company go in developing new services? How do customers experience new services or service areas? (Hämäläinen & Lammi, 2009).

### 2.10.3 Service blueprinting

In many ways customer journey is similar to Shostack's (1984) ideas of service blueprinting. Just as the customer journey, service blueprinting is a technique for visualizing a service system. Shostack puts emphasis on the process and inseparable characteristics of service and suggests that, in order to identify and define processes, a blueprint should document all the steps and points of divergence that constitute the service. Moreover, a blueprint should also incorporate parts of the service process that customer does not see, because these invisible processes also known as "back-stage", may affect how customer perceive the service. Likewise, Lovelock & Wirtz (2011) explain, that a key characteristic of service blueprinting is that it distinguishes between what customers experience in "front-stage" and the activities of service employees in "back-stage", where customers can't actually see them. In turn, these two dimensions are separated with a so called "line of visibility".

According to Shostack (1984) by illustrating the processes involved in the service, possible fail points can be isolated at the drawing board and potential problems can be identified in advance. Shostack suggests that by looking at processes as structural elements, different characteristics of service process can be engineered for strategic service positioning purposes. In addition, Lovelock & Wirtz (2011) claim, that service

blueprint clarify the interactions between customers and employees and how these are supported by back-stage activities and systems. By clarifying interrelationships among employee roles, operational processes, information technology, and customer interactions, blueprints can facilitate the integration of marketing, operations, and human resource management within a company. Further, blueprint also gives managers the opportunity to identify potential fail points in the service process and identify the points where there is a significant risk of things going wrong (Lovelock & Wirtz, 2011).

According to Maffei et al. (2005) the main distinctive focus on service blueprinting is its possibility to design, describe and illustrate the user experience, including different interaction modes, patches and choices. Moritz (2005) views a service blueprinting as a way for mapping service journey, by identifying the processes that constitute the service and isolating possible fail points and establishing duration of the various stages for the journey. According to Moritz, a service blueprint is an operational tool that describes a service in enough detail to implement and maintain it. Interestingly, Maffei et al. (2005) argue that service blueprinting strives to represent the complexity of service organization whereas customer journey represent the experiences of the customer on the service process.

According to Moggridge (2007) service blueprint describes a service in a detail level in order to implement and maintain it. He states that typically the service blueprint is used by business process managers, designers and software engineers during development and works as a guide to service managers who operate services on a day-to-day basis (Moggridge, 2007). The blueprint informs service managers about the features and quality of the service, ranging from the flow of use to technical infrastructure and brand management.

Wilson (2008) views service blueprint as a picture or map that accurately portrays the service system that the different people involved in providing it can understand and deal with it objectively regardless of their roles or their individual points of view. A service blueprint visually displays the service by simultaneously depicting the process of service delivery, the points of customer contact, the roles of customers and employees, and the visible elements of the service. It provides a way to break down a service into its logical components and to depict the steps or tasks in the process, the means by which the tasks are executed and the evidence of the service as the customer experiences it (Wilson, 2008).

As it has been argued earlier, customer journey and service blueprinting can be utilized also in the mining and metallurgy industry to make contribution to services improvement. Especially the service provider can benefit from the techniques introduced above by identifying interactions in customer-employee interactions but also in interactions with technology and equipment as well as interactions with physical surroundings.

## 2.11 Summary of the literature review

To summarize present chapter, services were described to be heterogenic and inseparable processes consisting customer co-production efforts and frequent interactions between customer and service provider. In doing so, the service process should lead to defined and acceptable outcome. Likewise, it was discussed, that outcome of the service process is the main ground for customer experience. However, it was argued that service encounters, where customer directly interacts with the service and its resources are important as they affect on customer perceptions in a number of different ways. In this sense, it is essential to plan the role of the service employee, physical facilities and ways of operation thoroughly. In the other hand, accessibility, interaction and customer participation along with the technical outcome of the service process has to be taken into consideration when developing the service offering. This is especially important, when developing service offering. Finally, customer journey as one of the user-centered service design methodologies was introduced for identifying and analyzing the service encounters in the service process.

# 3 THEORETICAL FRAMEWORK

This brief chapter introduces the conceptual framework, which guides and sets the boundaries for the empirical part of the study. The framework is based on theoretical discussions presented in previous chapters.

The previous chapters gave an overview of the process dimension of service and dealt with customer journey as a service design tool. Even though some of the topics discussed earlier are not directly analyzed in the empirical part of this study, they were discussed since they were recognized to be relevant to the wider phenomenon surrounding the research topic. Furthermore, they can also help to form a wider understanding of issues related to service business and encourage for further studies related to the area. Figure 6 below illustrates the theoretical framework of this study.

The theoretical framework above illustrates the key topics discussed in the previous chapters and how they are related to the empirical section of this study. The solid elements illustrate the concepts and themes of this study. The arrows indicate the relationships with the different elements and how they are related to the empirical part of this study. On the top the industrial services are illustrating the background of the study. This is connected to the research objectives where the theoretical background is drawn. Below the theoretical background key topics: service process, service encounters and customer journey, are highlighted. It is noteworthy that topics, which were discussed in the literature review but not focused on the empirical part, can be seen on left and right hand side. Here, the key concepts are connected to the fieldwork. As the overall research question of this study is "How Outotec could unify its practices and processes during service encounters through customer journey mapping", it is the basis for the empirical study. The development areas for satisfactory service encounters are analyzed through the empirical study emphasizing output of the maintenance service process, interpersonal interaction and expertize of the service technician. Finally, the potential development areas are illustrated on the bottom of the framework.

The next chapter begins by introducing maintenance services as a part of industrial services before proceeding to the research methodology and the empirical part.

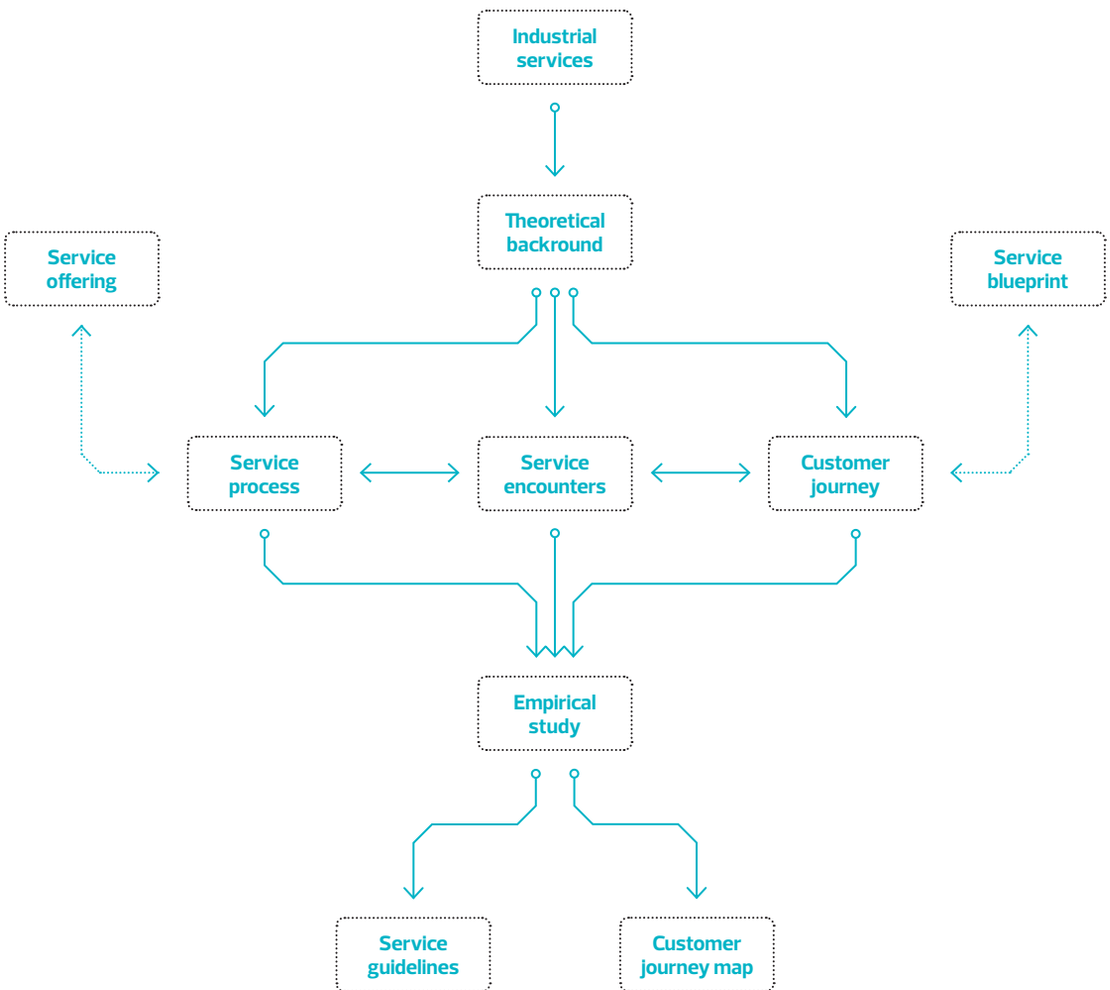


**Figure 8.** Themes and topics studied in this study.

# 4 INDUSTRIAL SERVICES

This chapter draws an overall picture of the maintenance services within the mining and metallurgy industry. First, overview of the mining and metallurgy industry is provided in order get an appropriate picture of the context of maintenance services. Then, buying process and various characteristics of maintenance services are discussed. Finally, different types of maintenance service are explored.

## 4.1 Background

There is a lot of evidence in service marketing and industrial marketing literature about benefits of complementing products with services. Without going to business value creation too deeply, it is seldom possible for a traditional manufacturer to create sustainable advantage with a price strategy or based on technological development with product strategy. In a response, suppliers often develop product-related services to exploit the installed base, in order to provide more support over a longer time period than the actual physical product. According to Rogelio & Kallenberg (2003) these are commonly acknowledged as product-related services or after-sales services, which are provided periodically or as required during and after a warranty period. According to the authors, the main advantage that a manufacturing company has over other service companies is their cumulative experience in maintaining their own equipment and the utilization of product development expertise (Rogelio & Kallenberg, 2003) In the following Outotec maintenance services provided for the mining and metallurgical industry are described as an example of industrial services (Grönroos, 2007).

## 4.2 Defining mining and metallurgy industry as a context

Based on the internal discussions and materials within the case company, it can be stated that mining and metallurgy is characterized by massive investments related to production facilities with high-install base of products such as concentrator and smelter plants. These investments can vary from tens of millions to hundreds of billions. In this context, Outotec is a supplier of process equipment and technology, and their profits are based on investments of mining companies.

Compared to business-to-consumer markets mining the metallurgy industry is rather sensitive to economic fluctuations. During the periods of economic growth, investments are typically booming, constituting a good point of opportunity for the supplier to

sell process equipment and technology. In contrast, in the times of stagnation and/or decline, customers typically reduce their process investments. Correspondingly, existing processes are maintained on un-interrupted operation and optimized if necessary. As a response to economic cycles, manufacturing companies offer value adding services after machine deliveries by offering different kind of services (Quinn, 1992). For instance in the mining and metallurgy industry product-related services consist of services such as technical services, operation and maintenance services, and spare parts (Outotec, 2012a). By delivering combinations of equipment and services in other words hybrid offerings, suppliers are targeting for stable revenue streams in cyclic industries (Ulaga & Reinartz, 2011). It has been also found out, that substantial revenue can be generated from an install base of equipment with a long life cycle. For instance, in elevators it has been estimated, that an elevator may have a product life cycle of ten years, but a service cycle of 100 years (Potts, 1988). Potts have discovered that, 70 % of service revenues can come from the mature and end parts of the product lifecycle. Figure 8 illustrates this service life cycle approach.

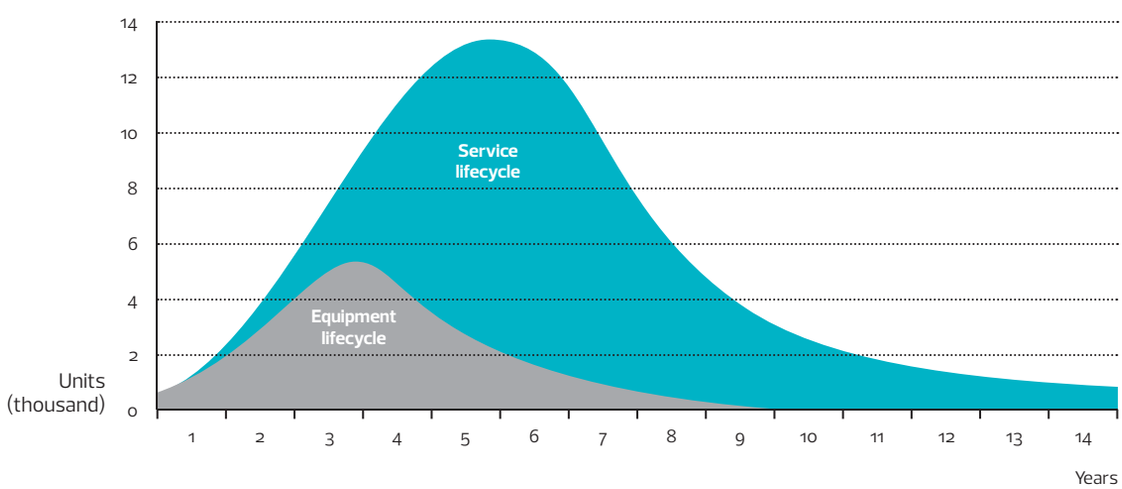


**Figure 9.** Service lifecycle approach (Source: Potts,1988).

To generalize a little bit, these product-related services have also proven to be the most profitable and highest growing part for many manufacturing companies and their business. For instance in Outotec the service business grew to EUR 282.5 million in 2010 (2009: EUR 148.6 million) meanwhile the share of the service business in Outotec sales has risen to 29% (2009: 17%) (Outotec, (2011a). However, it is noteworthy, that the growth is resulted from acquisitions although the service business has also grown organically. Also, there seems to be a tendency, that the turnover of the manufacturing company may also seem greater, when the company offers a combination of manufacturing and service (Neely, 2008). This is illustrated in the Figure 9. As these product-related services

are likely to create sustainable advantage, they are also rather hard for competitors to imitate and thus increase switching costs. For instance, customers who are familiar with the supplier as a manufacturing may feel also comfortable in the hands of its service organization (Shankar et al., 2009).

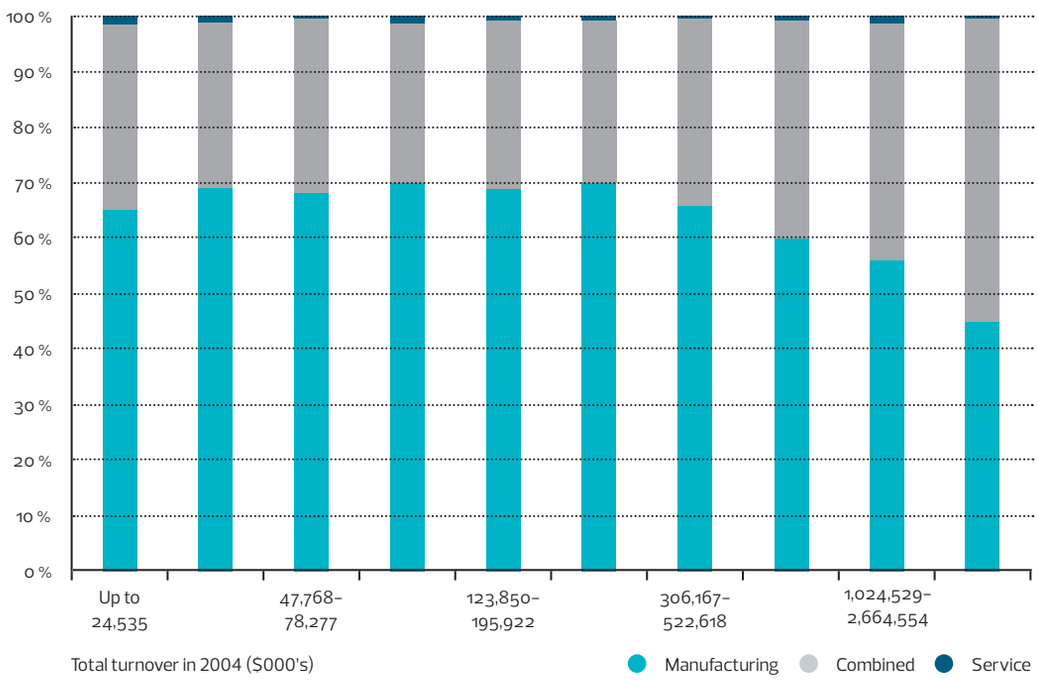


**Figure 10.** Relationship between the firm focus and total turnover 2004 (Source: Neely 2008).

## 4.3 Buying maintenance services

From the customer perspective, a company can either buy maintenance services periodically and maintain the equipment by itself or make maintenance service agreements on an ongoing basis. When the customer company is buying periodic maintenance services, they are buying single maintenance inspections. Typically the buying process initiates so that the customer identifies the need for maintenance service work, for instance technical inspection or preventive maintenance. After that the customer identifies the potential service provider, which typically is the supplier of technology or equipment and requests quotation for work at hand. Finally the customer either approves or rejects the quotation. If the customer approves the quotation, process evolves and the customer and service provider set up the service delivery.

In turn, when the customer company makes a maintenance service agreement they are buying reliability under agreement in the form of scheduled preventive maintenance

actions. Maintenance service agreement can be open-ended covering technical services under contract. On this basis, maintenance service agreement can also entail specific amount of predetermined amount of one-time service visits for agreed period of time. Depending on the amplitude of the agreement these service visits can range from two to twelve visits in an year. Furthermore, the maintenance service agreement can cover several pieces of equipment, since the customer may have various types of equipment side-by-side on their facilities.

## 4.4 Characteristics of maintenance services

There are several distinguishing characteristics in maintenance services. Foremost, in the context of mining and metallurgy, at the core of the maintenance service is always the equipment. These include for example filters, floatation cells, grinding mills or analyzers. Therefore, maintenance services are always tailored for specific equipment type. Thus, the aim of all the maintenance services is to ensure reliability of the equipment by preventing equipment failures before they actually take place. Similarly, maintenance services are always conducted on the customer plant. This is usually referred as 'on-site' work. Since the customer facilities are located in remote locations, every service visit has to be planned carefully beforehand in order to secure effective service delivery. As a consequence, it is critical to ensure that the equipment continues to do what is expected in its operating context, since unplanned equipment downtimes can cause massive financial and production losses for the customer. It should also be recognized that the equipment portfolio of manufacturer is typically extensive covering various equipment types for different concentration and smelting processes. In this perspective, diverse competence is needed for the service technicians and single service technician can basically master only one or two equipment comprehensively.

## 4.5 Outotec maintenance services

In the mining and metallurgy industry maintenance services are typically outlined into four different maintenance types: (1) maintenance inspection; (2) preventive maintenance, (3) corrective maintenance and (4) emergency service (Outotec, 2012a). Figure 10 summarizes Outotec maintenance service portfolio as they are illustrated by Outotec. In the following each of these service types are being discussed in more detail.

### 4.5.1 Maintenance inspection

The most "lightweight" service type in maintenance services is the maintenance inspection. Like stated, the maintenance inspection is conducted at intervals, typically semi-annually, for reducing risk of premature equipment failure, breakdowns or poor process performance. During the maintenance inspection, service technician conducts

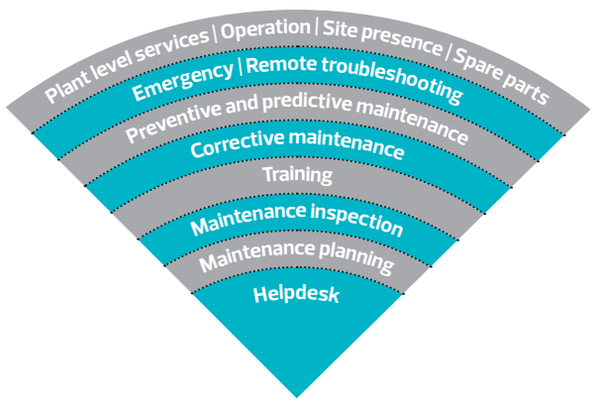


**Figure 11.** Outotec service portfolio (Source: Outotec, 2012a).

an inspection for the specific equipment type, in order to assure that the equipment is working properly. As a service operation, maintenance inspection is composed on step-by-step actions based on an inspection checklist. During the on-site service visit, service technician conducts a maintenance inspection by evaluation of the condition and operation of the equipment. However, during the maintenance inspection the equipment is not being repaired or modernized. Instead, based on the maintenance inspection, inspection report is composed to summarize the status of the equipment and list the recommendations for following maintenance and operation. In many ways, maintenance inspection is a standard procedure, which can be replicated repeatedly based on the inspection checklist (Outotec, 2011b).

### 4.5.2 Preventive maintenance

Preventive maintenance is a scheduled service action conducted for the equipment periodically within the agreed point of time. Generally preventive maintenance work is conducted in semiannual field service visits. During frequent checks the equipment is being maintained and repaired. Typical preventive maintenance service involves different kind of scheduled maintenance actions from cleaning and oil change to replacement of wearing components and/or optimization of the equipment. Preventive maintenance services are usually provided under maintenance service contract. The goal in preventive maintenance is to maintain the reliability of the equipment and avoid failures before they occur (Outotec, 2012a).

### 4.5.3 Corrective maintenance

Corrective maintenance refers to a service, where equipment is overhauled after break down or component failure. Since breakdowns and failures occur in unexpected occasions,

they cannot be fully anticipated. Therefore, the customer must request corrective services separately after a component failure or break down. Considering the service performance, corrective maintenance typically involves repair or replacement of the failed components. Corrective maintenance can be conducted under onetime field service visit. However, corrective maintenance is typically bundled with preventive maintenance for equipment. In this context, corrective maintenance is a critical solution to overcome equipment failures rapidly, since service support is available fast and service delivery is planned tentatively in advance (Outotec, 2012a).

### 4.5.4 Emergency service

Third service type in maintenance services is emergency service. Since emergency services are always provided under extensive maintenance service agreement, it is an expansion to preventive and corrective maintenance services. Emergency services can be considered as 'standby' services, where service provider provides readiness for the customer up to 24 hours a day and 365 days a year. This is done by providing "a hotline" phone number for the customer, which is available on agreed timeframes. On emergency services there is a set timeline for how quickly service technicians are available on-site for troubleshooting and repair activities. Response time is always set on maintenance service agreement. Usually emergency services are performed after customer has indicated operational faults, for instance critical malfunction or unexpected failures, which need to be repaired promptly with short response time. In agreement wise, emergency services are conducted always under extensive maintenance service agreement and bundled with preventive and corrective maintenance services (Outotec, 2012b).

In general there is a tendency to grow relationships with customers by means of service contracts, where each of the service types described above can be bundled into modular service agreement. According to Rogelio & Kallenberg (2003) this is often derived from the fact, that the service provider assumes the risk of equipment failure. On this basis service agreement can consist of two maintenance visits per year and one corrective maintenance visit in case of emergencies (Outotec, 2012b). Ultimately the culmination of maintenance service is the operation and maintenance concept, where service provider provides full time site presence and operation in order to support customer's operation (Outotec, 2012a).

## 4.6 Summary of industrial services

In a present chapter it was presented that there is a clear tendency towards service-product systems in pursuing sustainable strategy in manufacturing companies. This, arguably, is because services provide more stable sources of revenue, as they are resistant to the economic cycles. One example of these product-related services are Outotec maintenance services, which are provided for the customer's owned equipment base. What

is common to these maintenance services is their objective to prevent equipment failures in an attempt to avoid unnecessary financial and production losses. Subsequently, there is a move towards modular maintenance service contracts involving certain maintenance service types. This, is due of the aim make better use of installed equipment base and retain revenue flows in mining and metallurgy industry.

# 5 RESEARCH METHODOLOGY

This chapter focuses on the data collection method used in the empirical research. The chapter begins by exploring qualitative research, case study method and participant observation as an approach in social studies. Then, Outotec as a case company is being introduced. After that different types of interviewing as a methodological tools are described.

## 5.1 Qualitative Research

According to Bryman (2008) qualitative research can be described as research strategy that emphasizes words rather than quantification. Bryman (2008) argues that qualitative research has rejected the practices and norms of the natural scientific model. In contrast, by using qualitative research methodology in the collection and analysis of data, researcher seeks answers to questions that stress how social experience is created and given meaning (Denzin & Lincoln, 2011). May (2002) argues that qualitative research always involves direct encounter with 'the world'. This can take the form of ongoing life or interactions with a selected group.

Meanwhile qualitative research is considering the objectively measurable 'facts', it is also interested with the ways that people construct, interpret and give meaning to these experiences (May, 2002). In the other hand, Denzin & Lincoln (2011) emphasize socially constructed nature of reality in qualitative research. The authors write that qualitative research strives to seek answers to questions, which examine how social experience is created and given meaning. Moreover, qualitative research focuses on intimate relationship between the researcher and research setting and situational constraints that shapes the research itself (Denzin & Lincoln, 2011).

In order to get better understanding and insights qualitative research draws on wide-range of interconnected practices. Qualitative research involves the use and collection of a variety of empirical materials. These include case studies, personal experiences, introspections, life stories, interviews, artifacts and cultural context and productions. Bryman (2008) describes that qualitative research has associated in methods such as ethnography, participant observation, qualitative interviewing and focus groups. Moreover, semiotics, narrative content and even statistics, tables and graphs are being used, in order to gain important insight and knowledge. Observational, historical and visual texts have also been used, in order to describe routine and problematic moments and meanings in individuals' lives (Denzin & Lincoln, 2011). Denzin & Lincoln argue that each practice conceives the world in different way, and therefore more than one interpretive practice

should be used in any study.

Typically qualitative approaches pay attention to dynamic processes rather than categories. Furthermore they aim to discover or develop new concepts rather than imposing preconceived categories on the people and events they observe. These commitments establish the common ground on which qualitative approaches are built (Gerson, 2002).

## 5.2 Case study research

Case study research is a part of approaches used in qualitative research (Yin, 2009). According to Eisenhard (1989) case study is a research strategy, which focuses on understanding the dynamics present within a single setting. Flyvbjerg (2011) follows Penguin Dictionary by stating that "*case study is a detailed examination of a single example of a class of phenomena*." The authors also argue, that "*case study can provide reliable information about the broader class*." Following this logic, case study combines data collection methods such as archives, interviews, questionnaires and observation. In social research, case studies are used for various aims: to provide a theory, to test a theory or to generate a theory (Eisenhard, 1989).

Yin (2009) explains that the case study method allows researching the holistic and meaningful characteristics of real-life events for instance individual life cycles, small group behavior, organizational and managerial processes and maturation of industries. Flyvbjerg (2011) argues that main strength of a case study research is the depth of meaning detail, richness, and completeness. Moreover case study enables also high conceptual validity and understanding of the context and the process of the research. Ultimately, it tells what causes a phenomenon by linking causes and outcomes (Flyvbjerg, 2011). In the other hand, case study is recognized to have substantial weaknesses as a research approach. Most notably statistical significance is often unknown or unclear. Selection bias may overstate or understate relationships between the researcher and research setting. Difficulties may derive also from weak understanding of occurrence in the population of the phenomena under study.

## 5.3 Case company introduction

This study is conducted in partnership with a technology company Outotec. At the moment, Outotec is one of the leading providers in process solutions, technologies and services for the mining and metallurgy industry. Since the company provides already tailored solutions for its customers, it can be said, that the most logical strategic intent is to adopt Helander & Möller's (2008) value provider model. The company headquarters are located in Espoo, and the company is listed in the Helsinki stock exchange (NASDAQ OMX Helsinki).

In this study Outotec was selected as a case company mainly for three reasons. Firstly,

the consumption and production of maintenance services is very heterogenic and relies heavily on the performance of the service technician. There are several steps in the service process where the service technician interacts with the customer. It is clear that customers are likely to perceive great degree of variation in service quality. Secondly, since maintenance services are consumed and produced simultaneously in the customer facilities, they have to participate on the production of the service in some extent. In this sense, there is a significant degree of interaction in all stages of service consumption process. Thirdly, maintenance services are built around the equipment, which makes it an interesting new research area for service design.

As an independent market actor, Outotec can be considered as a quite young company. Outotec's history as a separate company can be traced back to 2006. During that time Outotec's core competences, resources and business were part of Outokumpu, and organized under one business unit called Outokumpu Technology. Based on strategic decisions Outokumpu Technology was sold to external parties during 2006. Subsequently, Outokumpu Technology was spun off as a separate entity Outotec in 2007 (Outotec, 2012c).

At the writing moment, Outotec has expanded its business over five years. Since its independent existence, Outotec's market position and technology leadership has expanded though acquisitions. Through several major acquisitions Outotec has consolidated its position as the leading technology partner in the mining and metallurgical industry. By focusing acquisitions, Outotec is aiming at increasing sales and strengthening geographical position. Furthermore, the objective is also to acquire more expertise and resources, as well as complementing Outotec's technology and service offering. Considering the brand architecture, all of the acquired companies and their offerings have been united under a single Outotec brand (Outotec, 2012d).

Outotec customer base is based on large globally operating mining companies and metal producers along with the local mining and metals companies. In order to meet its customer's diverse and agile needs around the globe, Outotec serves customers globally. This is done through local service centers and by using extensive global subcontractor network including local experts for engineering and manufacturing commissions (Outotec, 2012e).

## 5.4 Participant observation

Becker & Geer (1957) define participant observation as a "*method in which the observer participates in daily life of the people under study, either openly in a role of a researcher or covertly in some disguised role*". Grisby (2001) follows Spradley (1980), when writing that engaging in participant observation is twofold. Firstly it requires the researcher to engage in activities appropriate to the situation. Secondly participant observation should involve observation about the activities, people, and physical aspects of the situation. Following this, the participant follows the tradition of the ethnography, in which research closely

engages in the daily life of another culture or some social setting (Moisander & Valtonen, 2006). Moisander & Valtonen (2006) discuss that by entering into close face-to-face interaction with the people in their everyday lives, researcher can develop understanding of the tacit ways in which people make sense of their lives in the setting in question. This kind of exposed experience is seen as the fieldwork method, which can be documented with field notes in descriptive detail (Moisander & Valtonen, 2006). Kujala (2003) argues, that designers should take an active role in user involvement. According to her users are expert in their own field, but they do not need to be experts in design. Therefore, field studies are particularly promising approach to gain knowledge about users' implicit and non-verbal needs and understanding users' behavior and the context.

## 5.5 Interviewing

According to Moisander & Valtonen (2006), qualitative research is often associated with personal interviews. The interview is not so much a method of gathering information, but rather a vehicle for producing cultural talk. In order to gain cultural knowledge about the research problem, interviews are typically analyzed. Following Fontana & Frey (2005) the interview is a source of information and basic method for data gathering. The aim of the interview is to obtain rich, in-depth experiential account of episode in the life of respondent.

When it comes to the reliability and validity of the findings Arksey & Knight (2009) underline, that all informants are asked exactly the same questions and given similar sorts of clarification. This guarantees that the findings can be trusted and generalized. In addition, it is important make sure, that interviews are long enough, whereas, a set of questions should also cover relevant themes raised by the research questions (Arksey & Knight, 2009). However, in terms of trustworthiness and consistency, complete reliability is not attainable, because validity and reliability cannot be straightforwardly applied to qualitative research as Arksey & Knight claim.

Considering the qualitative interviewing, Fontana & Frey (2006) discuss about three major types of interviewing: structured, group and unstructured. In qualitative interviewing Bryman (2008) describes two major types of qualitative interviewing unstructured interviewing and semi-structured interviewing.

### 5.5.1 Structured interview

Typically structured interviews are being applied in a survey research (Bryman, 2008). According to Bryman (2008) structured interview entails the administration of an interview schedule by an interviewer. By asking all respondents the same series of pre-established questions, every interviewee receives exactly the same context of questioning (Bryman, 2008). According to the Fontana & Frey, (2005) the interviewee controls the pace of the interview in straightforward manner, by reading out the questions exactly

in the same order as they are in the schedule (Bryman, 2008). Questions are usually very specific offering a fixed range of answers (Bryman, 2008). Moreover, the response categories are also a limited set and there is little room for variation in response except when open-ended questions are used. In order to ensure that replies can be aggregated, structured interviewing aims to capture precise data in codable nature.

### 5.5.2 Semi–structured interview

In semi-structured interview, the interview process is flexible in nature. Bryman (2008) states, that in semi-structured interview the interviewer follows "*a script*" to a certain extent. The emphasis is on how the interviewee frames and understands issues and themes to be covered. Usually semi-structured interview refers to a context in which the interviewer has a series of questions to be covered. The list of questions works as an interview guide by establishing the schedule for the interviewee. Even thought the sequences of the questions can vary, all the questions will be asked with similar wording from interviewee to interviewee. The questions can be more general or fairly specific. The interviewer has also some latitude to ask further questions, in a response to what are seen as significant replies (Bryman, 2008).

### 5.5.3 Unstructured interview

According to Denzin & Lincoln (2005) unstructured interviewing can provide more diversity than any other qualitative interviewing. Unstructured interview is not embodied with close-ended questions (Denzin & Lincoln, 2005). According to Bryman (2008) the interviewer typically has only a list of topics that are to be covered during interview. Style of the questioning is usually informal enabling loose interaction between the interviewer and the respondent. Moreover, the phrasing and sequencing of questions will vary from interview to interview. Fontana and Frey (2006) writes that unstructured interviewing targets to understanding of the complex behavior of members of the society without imposing any prior categorization that may limit the field of inquiry.

Rönnholm (2012) also speaks about unstructured interviews. He suggests that the researcher should go into the context by talking with people in "*real environment*". Rönnholm (2012) argues that people can talk about their experiences better, when they are surrounded by the touchpoint of the experience and when interviews are conversational rather than structural and formal. According to Rönnholm (2012) the interview should make people to talk about their feelings and experiences through conversational rather than structural and formal interviews.

## 5.6 Summary of research methodology

In this chapter qualitative research methodologies were presented. Qualitative research

was defined to be a method, which focuses on understanding particular cultural phenomena from the perspective of an individual. In doing so, there are number of different approaches, which can be associated with qualitative research methodologies. In this study three different qualitative research methods were especially addressed. Case study as a research strategy was explained to be a research strategy in examining characteristics of real life event through individual unit. Then, participant observation was explained to be a mean of collecting data in which researcher participates in the daily life of individuals under study. In addition, semi-structured interview, which contains established list of topics and themes to be covered during the interview, was argued to be flexible format of interviewing.

# 6 DATA COLLECTION

This chapter portrays the empirical research of this study. At first, an overall picture of the fieldwork is drawn. After that, the participant observation and semi-structured interviews in material collection process are explored. Then data recording is described for establishing empirical groundwork for the study. Last, content analysis is introduced as a methodology for studying the research data.

## 6.1 Background

In this study the empirical part was carried out in two parallel stages. The first phase was based on real world fieldwork involving conduction of ethnographic observation with Outotec service technicians. The fieldwork was carried out during a four-month period from the end of May to the Middle of August in 2012. During this period I actively observed typical Outotec field service visits with Outotec service technicians on typical customer's sites. My role as a researcher was to passively observe how service visits are carried out on customer interface. Special attention was on interpersonal interaction and repeating routines occurring before, during and after field service visit.

## 6.2 Fieldwork

Preparation of the fieldworks was a time consuming and complex process. The project started with a briefing about the objectives of the study and how the project was supposed to be carried out. This was done in early of June by running 45-minute presentation for service business managers in Outotec. Once the study was authorized, managers in local service centers in Middle-Europe and South Africa were approached to authorize potential field service visits in their region (Appendix 2). Finally, actual field service visits were arranged with admission of local service center managers and service technicians. This turned to be the most complex and time consuming phase of the project, since service technicians are operating on-site almost continuously. Therefore on-going communication and careful planning was a prerequisite to make the fieldwork possible. Finally all the practical issues such as booking accommodation and flight tickets were arranged with a support of local team assistant.

### 6.2.1 Participant observation

As identified earlier, in this study fieldwork was built upon participant observation. During four-month period I actively observed typical Outotec maintenance services conducted in customer plant facilities. The services were typical maintenance services varying from maintenance inspection to preventive maintenance and warranty services. Each site visit was prepared beforehand in order to secure safety and effective participation in field service visit. In my case, obligatory preparations involved setting up mandatory work outfit including safety trousers and jackets along with a safety helmet, ear protectors and safety glasses. I also went through to the customer specific material whenever that was available from the Internet or company databases. In similar manner I gathered basic information about specific equipment, which was related to technical service at hand. Similarly I tried to run face-to-face conversations with Outotec expert to gain practical information about the technology whenever that was possible.

The fieldwork was directed at typical Outotec customers in two different market areas: Finland and South Africa. These two regions were basically chosen to represent differences on the maturity on maintenance service history and customers installed equipment base. The customer companies represent typical Outotec customers, who use Outotec maintenance services for their installed equipment base. As the companies wish to remain anonymous, they are entitled here as Company A, Company B, Company, C, Company D, Company E and Company F. For the same reason, any photographs from the fieldwork cannot be represented in this study, because they may reveal confidential information about processes and installed equipment base on the customer sites. The first two service visits were conducted during June in Finland in *Company A* and *Company B*. The next four visits were carried out in South Africa: *Company C*, *Company D*, *Company E* and *Company F* in July. In total I spent approximately 60 hours on-site observing maintenance service activities and operations. In addition I also spent significant amount of time traveling with service technicians. Likewise, this also provided a direct link with the service technicians and made it possible to gather information from their service experiences. Table 1 summarizes the characteristics of the fieldwork and the locations of the site visits are illustrated in Figure 11.

When conducting the fieldwork, the aim was to find out what kind of service encounters take place before and after the actual service operation. However I did not want to restrict my involvement too much, since customer responsible may contribute to service production in any minute during the service operation. Therefore, I observed continuously the service operation continuously until it was finished. However, I strictly followed my ground rule, by emphasizing more on the interpersonal interactions between the customer and the service technician rather than conduction of the technical service work. Similarly I focused my attention to unexpected interruptions such as third party telephone conversations, which may interrupt the service encounters.

At first my aim was to appear in an unobtrusive manner by keeping low profile during field service visits. However after couple of hours of the first visit I understood that by

| Customer | Location | Date | Service type |
|---|---|---|---|
| **Company A** | Finland | June 29 to 30, 2012 | Installation under warranty |
| **Company B** | Finland | June 19 to 20, 2012 | Maintenace inspection |
| **Company C** | South Africa | July 24, 2012 | Preventive maintenance |
| **Company D** | South Africa | July 25, 2012 | Periodic shutdown service |
| **Company E** | South Africa | July 26, 2012 | Preventive maintenance |
| **Company F** | South Africa | July 26, 2012 | Preventive maintenance |

**Table 1.** Overview of the fieldwork.

taking a more active role, it was possible to gain more extensive insight. In many ways this was a valuable realization, since quite soon I started to hear inside stories about how maintenance services should be carried out successfully. I also understood that by participating proactively it was also possible to build trust and commitment between me and service technicians. On some field service visits I was even allowed to help with minor service performances such as helping with changing spare parts and handing over tools when needed. Even though I had familiarized myself with Outotec technology, visiting on-site and witnessing equipment in real life allowed me to understand how process equipment and technology are connected to the actual concentration process.

Throughout each service field visit I discussed actively with Outotec service technicians and customer company employees. By maintaining on-going conversation and questioning actively, Outotec service technicians were willing to share their experiences and opinions about maintenance services and customer encounters. This would have not been possible if I had been totally unnoticeable and passive as a researcher. It is quite evident that by conducting fieldworks by following totally objective research methodologies, I would have not been possible to gain such rich evidence about field service visits.

Simultaneously with the observation, contextual interviews were also carried out with the customer representatives and Outotec service technicians. These contextual interviews were totally unstructured and there were no pre-determined lists of questions or themes to be covered. In contrast there were an idea about the aspects I wanted to be explored and the aim was to gain some unexpected finding that would be hard to gain in formal interviews. In fact, the interviewees were not even mentioned that interview is at hand. In some instances the approach was more driven by the Outotec service technicians and customer company employees and my role was only moderate the conversation and document the data. These discussions were actively documented during the conversation by making notes while listening.

**Figure 12.** Location of the fieldworks.

### 6.2.2 Semi-structured interviewing

The second stage of the empirical part involved semi-structured interviews with the Outotec's customers. The purpose of the semi-structured interviews was to verify the findings gathered during the participant observation. In order to obtain opinions and experiences about service encounters, semi-structured interviews were conducted directly with Outotec's regular customers during the service visits. The interviewees were selected because of their central role in the maintenance service delivery process. The same people seemed to act as a customer representative in service delivery and play essential role in service encounters. Table 2 summarizes the current position of the respondents and the site's location.

Since customers were quite busy professionals, the moment for interview was inquired beforehand. This was done by the nominated service technicians, because they were responsible for informing customer about the interview. Service expert asked about the possibility for interviewing. Furthermore, to support the inquiry a cover letter describing the background and the objectives of the study was composed the beforehand (Appendix 2). For the interviews pre-determined list of open-ended questions were designed to cover themes that were practical for the study (Appendix 3). The interviews were conducted in customer premises as face-to-face discussions. All the interviews were tape recorded for further transcription with a permission of the interviewee for further transcription. During the interviews, the order of the questions varied depending on the flow of the

conversation. Some additional questions were also asked in order to explore rising themes. Interviews were kept short in time lasting from 45 to 60 minutes.

| Customer | Respondent position | Location |
|---|---|---|
| **Company A** | Project engineer | Finland |
| **Company B** | Mill manager | Finland |
| **Company C** | Plant manager | South Africa |
| **Company D** | Maintenance supervisor | South Africa |
| **Company E** | Operation manager | South Africa |

**Table 2.** Overview of the interviews.

## 6.3 Recording research data

According to Krippendorf (2004) research must be recorded in a medium, which allows repetitive examinations. As social situations are lost, creating field notes and transcribing interviews are ways to preserve research observations. In this study, all the way through the fieldworks, participant observations, contextual interviews and semi-structured interviews were documented carefully. During the observation I actively made actively field notes to describe what I have observed and experienced. For instant documenting I a used notebook for making field notes and rapid illustrations. To recall central experiences from the field service visits, I took photographs by using iPhone S Camera. This proved to be compact and handy during the fieldwork. Mostly because it did not distract the interpersonal interactions and the actual service operation, which would have not been possible with heavy DSLR camera.

In order to make personal documentation more effective, I had designed a customer journey template (Appendix 4) before the actual field service visit. These templates were carried along in every field service visit. The customer journey template was based on four central aspects of maintenance service process: service encounters, service touchpoints and service environment. There was also a room for documenting descriptions and recommendations. Similarly, the service process itself was separated into three phases: preparation for the service visit, field service visit and follow up. The template itself was freely adopted from the customer journey canvas by Stickdorn and Schneider (2010). When conducting the fieldwork, the template proven to be a valuable tool, since it allowed to me to illustrate the specific service journey with central touchpoints while it was happening. In similar manner, the service journey template enabled me to list improvement ideas in 'real time' immediately while they were occurring.

Once arriving from site field notes were transcribed into explicit field diary for further analyses. Similarly recorded interviews were converted in detail into a written transcript by the author as soon as possible after the interview. As a ground rule transcription of a 45-minute long interview took approximately 6 hours monotonous labor to transcribe accurately whereas transcribing a field diary was approximately 3 hours work.

All in all, the data collected for this study included 5 transcribed customer interviews. The documents of each transcribed interview averaged 8 pages of dense text, 3 pages of transcribed field notes based on the participant observation and 9 illustrated customer journey maps. In together these established empirical groundwork for the study.

## 6.4 Analysis

Once all the data was transcribed into an appropriate format, the extensive amount of data was analyzed in detail. In order to interpret the meaning from the content of text data, theories from content analysis were utilized. According to Berelson (1952) content analysis is "a research technique for the objective, systematic and quantitative description of the manifest content of communication". Bryman (2008) agree with Berelson stating that content analysis is firmly rooted in the quantitative research strategy targeting to produce quantitative accounts of the raw material in terms of categories specified rules. Similarly Weber (1990) says that content analysis is a research method that uses a set of procedures to make valid inferences from text. Content analysis can be used in coding open-ended question surveys and describe trends in communication content.

In this study the content analysis was utilized rather freely. Once the interviews were transformed into analyzable representations, interview transcripts and written field notes were analyzed by reading in order to summarize what the text collectively meant (Krippendorff, 2004). In fact, texts were read various times until the text was conceptually clear as Krippendorff (2004) suggested. Weber (1990) suggests that, the text can be analyzed by counting words and classifying them into categories. However, since the amount of data was rather small, it was decided that there is no specific need for developing categories from the quotes in this study. Instead of counting text, emphasis on analysis was on finding frequency of sentences from transcribed texts. Although, the wording of the respondent varied considerably, there was a significant degree of common specified characteristics on the texts. As acknowledging this, it was possible to find relations between the cases and interpret and explain word meanings. However, since there was a great diversity of topics in interviews, it made rather challenging to form pedantic answers to the research question. As a support to the semi-structured interviews, participant observation as a data collection method provided the primary research data, which further supported the overall analysis. All these findings arising from the participant observation were analyzed in detail. This was done by constructing an exact picture of the service visits and pulling together themes into a well-organized story just as Kutsche (1998) presents.

## 6.5 Summary of data collection

In order to obtain detailed information about Outotec maintenance services, well-defined fieldwork was conducted in natural service environments. Field visits were built upon direct observation and semi-structured interviews by undertaking extended period of time within typical Outotec maintenance services. Altogether 6 different field visits involving 5 direct interviews were carried out in various customer facilities in Finland and South Africa. The results of the fieldwork were documented by utilizing tape recording and by making field notes. Finally, the research data was fully transcribed into written representations and analyzed systematically by using content analysis.

# 7 RESEARCH FINDINGS

The purpose of this chapter is to present the empirical findings of the study. First, different phases of the maintenance service are went through. Next, critical factors forming satisfactory service encounters are presented before, capabilities affecting on customer relationship are discussed. Finally, design guidelines as a practical outcome rising from the study are introduced.

## 7.1 Mapping out service encounters

Together the participant observation and semi-structured interviews showed that the consumption of technical maintenance services is a multifaceted process. In a process sense, consumption seems to follow standard procedures, even though the production of maintenance service is always a case-specific series of events. On this basis, these procedures can be divided into episodes, which further can be divided into actions. As explained in the chapter 2, the consumption of a service consists of three phases: (1) the joining phase, (2) the main consumption phase and (3) the detachment phase. In the following Lehtinen's (1986) service consumption process model is applied on the delivery of the Outotec maintenance services, in order to identify the steps that the customer and the service technician undertake during the service delivery process.

It is important to understand that it is rather challenging to gain evidence fully from the customer experiences in the entire customer journey because the researcher has to undertake an extended period of time him/herself in the customer organization. Essentially, this aspect makes it difficult to describe customer experiences and perceptions of maintenance service that take place before and after the actual service visit. However, determining the scope of this study, it was decided that sequences before and after the actual field service are assumed, based on the interview findings as they are presented.

### 7.1.1 The joining phase

Consumption of the maintenance service initiates from a service inquiry call. Practically speaking the customer gets in touch with the service provider, when the customer is contacted by the service technician by telephone. Above all, service technicians ask the customer whether they would like to have preventive maintenance service in near future. As the customer shows interest towards the service a preliminary date is set for the field service visit. During the telephone conversation, service technician goes also through more or less intentional question pattern related to the condition of the equipment,

health and safety and day-to-day actions of the customer facilities. This is important, because all of these issues may affect on the service performance when operating on-site. Finally during the conversation a schedule for the field service visit is being set. After the conversation the service technician makes mandatory preparations for the service visit. Similarly the customer representative conducts necessary preparations for the equipment based on the suggestions.

Sometimes, but not always, the inquiry call is followed by another phone call. This so-called confirmation call typically takes place only few days before the service visit. The objective of this conversation is to authenticate the service visit and go through the unexpected issues, which might have emerged suddenly. Furthermore, the service technician may inquire the availability and the amount of needed spare parts. Similarly, there maybe one interaction right before the delivery. This is more or less related to ad-hoc issues, such as unexpected issues and informing customer about the arrival.

### 7.1.2 Intensive phase

The consumption of the maintenance service evolves when the service technician arrives to the customer facilities. After the vehicle is parked, service technician enrolls in the main security office. Depending on the case, the service technician can be directed to the safety induction. Then the service technician is allowed to obtain a mandatory visitor entry permit. Finally the service technician is allowed to enter the facilities and permission for getting around is authorized by the security officer.

After entering the site area the service technician meets the customer contact employee. In order to build mutual understanding about the service work, an informal start meeting is held between these two organizational parties. In the meeting the customer gives up-to-date information about the condition of the equipment and expresses his expectations about the work at hand. During the start meeting the service technician also asks necessary background information questions related to the process and the Outotec equipment and technology. The customer provides background information about their process and the condition of the equipment. After the meeting the service technician is given permission to start working.

Before the actual working can begin, the service technician makes himself known in the control room. Unit foreman authorizes the work and provides compulsory work permits. While getting around on the customer site the service technician familiarizes himself also to the customer personnel around. Finally the service technician arrives to the specific process area where the particular equipment is located and starts working independently.

Depending on the case, the shape of the operation changes every time and the field service visit can be very multidimensional or straightforward. From the technical point of view, maintenance work includes typical maintenance actions, such as change of wearing parts and cleaning. During the service work, different employees pass by such

as maintenance men, operators and electricians. As a consequence, each individual's opinions can influence on the service production in certain extent. Finally, when all the actions are performed, the service technician concludes the work.

Right after the service operation is finished, the service technician informs the customer about the completion of the maintenance work. This is done either through face-to-face conversation or telephone communication. Soon after the customer and service technician participate in so called verbal reporting. During the meeting, the service technician goes through the conducted maintenance work phase-by-phase and gives suggestions for on-going maintenance between the maintenance visits. After the review, the customer approves the service operation by signing the service report. Finally, the service visit concludes with informal day-to-day conversation and greetings. Before leaving, service technician reports personally to the main security office and returns the visitors permit.

### 7.1.3 Detachment phase

One week passes by and the customer technician receives a service report through email. The report summarizes the service work conducted during service visit. Furthermore, service report provides suggestions for day-to-day maintenance and spare parts that are to be ordered. Also the answers for the pending questions are provided. In planning sense, service reports are stored into internal databases and forwarded to superiors. Next, occasional contacts and post-operational activities continue before the next inquiry call happens. After some period of time, service technician approach customer by phone. The aim is to ensure that the customer has acknowledged the suggestions based on reporting.

The process described above can continue for several months. It should be noted that the process above is only a generalization and exceptions exist naturally. Therefore, the delivery of the maintenance service is always more or less case-specific.

Interestingly, both participant observation and semi-structured interviews also allowed me to identify several individuals in customer organization dealing, directly or indirectly with the service technician during the service consumption process. This is important, because each of these actors tend to have subtle roles and needs in service encounters and ultimately in the sales activities. This finding supports the findings of Bonoma (2006), that each of these individuals establishes buying centers, which are likely to have varying degree of decision making power regarding of future sales decision. As a consequence, it is likely evident that maintenance personnel of the customer company are likely to influence the buying decisions as influencers. Therefore, service technicians should be also regarded as part-time marketers, since most of them are directly engaged in sales and cross-sales activities just as Grönroos suggests (1998).

## 7.2 Identifying outcome of the service process

Among the customer companies Outotec was seen as a well-known service provider with a good reputation on the mining and metallurgy industry. As expected, the companies expect the good quality service. Two of the respondents mentioned that they had bad experiences from the previous service provider, but as they turned to Outotec service quality has turned acceptable. One respondent pointed out that higher price could be explained because of the good service quality of Outotec services. Based on the participant observation, it was evident that the outcome of the service process has to be of good technical quality. After witnessing the service operation and hearing customer feedback, it was evident that necessary technologies and knowledge are in place, in order to deliver outcome of the service process successfully. In fact, service technicians enjoyed significant degree of autonomy on-site and in most of the cases there were no customer company representatives for supervising the service activities. This makes it clear that customer trusts the service technician and his capabilities to carry out the service operation successfully.

For the customer companies, the most important factor affecting to the service encounters was the ability of the service company's service technician to adopt and obey the health and safety act. For all of the customer companies it was extremely important, that service technicians do not cause any accidents or close call situations during their service visit. One of the respondents highlighted the importance of health and safety issues by saying: "*It is always safety. Safety is the first thing.*" Similarly, another respondent followed almost identical logic by stating, "*Obviously in every site safety is the first thing.*" Based on the participant observation it was quite obvious, that customer companies were expecting careful preparation in order to carry out the service activities and operation effectively and safely. In addition, in all of the cases, the security personnel authorized visits on the entrance gate. Similarly in two of the cases, service technician carried out site-specific health and safety induction in order to familiarize himself to the local health and safety act.

Besides service quality, the customer companies mentioned spare parts as a factor affecting to the service offering. One respondent summarized his experiences: "*Get up speed with delivery and prices of the spare parts.*" All of the respondents identified spare parts as a critical component of the core maintenance service. The customer companies felt, that the prices of the Outotec spare parts rather expensive. Likewise, the customer companies also saw, that spare parts should be competitive also in terms of price, in order to retain the cooperation also in the future. In fact, one respondent mentioned, that they are constantly scanning and evaluating quotations related to maintenance service and the spare parts between different service providers. Many of the customer companies were ready to try pirate parts if the quality is the same and if the provider is ready to support the maintenance service. Participant observation made also clear, that the service technician has to ensure needed spare parts and tools, in order to finish the job without interruptions. In this sense it goes without saying that the outcome of the satisfactory

maintenance service process is highly dependent on the availability of spare parts. Obviously, this finding could be explained by Knecht et al. (1993) finding that down-time costs typically run 100 to 10,000 times the price of the actual service. Therefore, good spare part performance can boost customer satisfaction.

Besides technical quality, customer companies expect to get proper documentation and report after the actual service activities and operation. One respondent mentioned: "*In order to leave piece of evidence from the service work, there could be more documentation and reporting.*" Another respondent added that: "*Documentation and reporting should include findings of potential deviations and faults and suggestions for on-going maintenance.*" Generally, respondents felt, that appropriate reporting helps them to carry out maintenance between service visits but also conduct necessary preparations for machinery and equipment before the actual service visit takes place. This all goes well with the philosophy of tangibilization, which refers to a method to transform intangible activities into concrete acts (Reddy, et al., 2005). It came evident that maintenance process does not end until customer receives proper documentation of the conducted service activities. In turn, customer expectations are not fulfilled, if the service reports are not delivered and maintenance service is not tangibilized into certain extent. As a response, sufficient mutual understanding about the content of the service can be created through tangibilization, and details of the service activities can be communicated to the customer (Hyötyläinen, 2010).

When the respondent's viewpoints are summarized it can be stated, that customers recognize maintenance service as a process, which aims to acceptable and successful service outcome. As suggested by Grönroos (1998) both the process and the outcome have to be carefully planned and well implemented, if the maintenance service is to be considered good. Obviously, in reality this process is also highly characterized by the moments of customer service-technician interaction, which affects the customer overall satisfaction. Further, each of these service encounters is valued by the customer and will be shared later in the customer company organization. This, in turn can lead to either positive or negative word-of-mouth about the service provider.

## 7.3 Employee factors having impact on service encounters

In order to meet customer expectations during service encounters, customer companies did not expect any special treatment. According to the respondents, the most important aspect on the service technician was his/hers ability to understand and respond to the customer's specific needs. Many of the customer companies appreciated service technician, who can be reached relatively short reaction times in order to provide support. Furthermore, one respondent also explained, that service technician's willingness to arrive promptly on-site in ad-hoc manner and work until the work is finished, was regarded as "*Good service*". Later, the same respondent described, that the service technician should always target for finishing service work during the same day, rather than extending service activities for

following days. Similarly, all of the customer companies were looking for a service where service technician always arrive on-site on time. Similarly, respondents expected that possible delays or other unexpected issues have to be informed promptly to the customer. One respondent summarized his viewpoint related to his expectations: "*Behave properly and take care of the service job as agreed. There is no need to perform any series of circus acts.*" These finding confirms Aspara & Tikkanen's (2008) finding, that business customers' assessments of purchase decisions are heavily based on their evaluations of the service providers customer-facing personnel and their activities, expertise and performance.

### 7.3.1 Equipment and service knowledge

In general, Outotec service technician were seen as competent experts and all the customer companies mentioned that they are satisfied to their nominated service technician. It goes without saying, that service technician's technical knowledge and expertise were found primary factors on satisfactory service encounters. When respondents were asked about key components of the competent service technicians, respondents simply felt that service technician should be "*Competent enough*", meaning the service technician knows the equipment at hand profoundly. Respondents also explained that the service technician has to be proactive and be capable of working independently on-site. One respondent highlighted that for them it is important that they do not have to provide any resources or supporting workforce for the service technician, during the service visit. Customer companies expect that the service technician can solve the problems on their own. Another respondent paid attention on professional communication skills and abilities to use the equipment and the machinery comprehensively. The respondent expected that, the service technician has to be capable to explain, issues to the detail and provide extensive answers to the customers questions. One respondent described his expectations to the equipment knowledge: "*Service technician must be able to go in depth to explain everything, so you can understand clearly the answer.*" In turn, one respondent described that dissatisfaction often arises from inaccuracy and incomplete communication: "*Do not answer the phone, do not give me any feedback, come late and do not phone back when you say you phone back. That would be a disaster to your company if you would behave like that*."

### 7.3.2 Interpersonal skills

Based on the observations, interaction between the customer and the service technician was informal. In all the cases, interpersonal communication was straightforward and resembled long-term business friendship. Later this was also confirmed through the semi-structured interviews. All of the respondents stated, that they did not expect service technicians to act formally or flatter them during the service encounters. In fact, one respondent mentioned that: "*It would be awkward, if the service technicians would be trained to act formally and please them as a position of customer.*" In turn, customer

companies obviously appreciated straightforward and open-minded communication. One respondent described his experiences: "*The best service we can have is that service technician makes appointment with me and we sit down and discuss couple of thing, make a joke or two and drink coffee. That is the best type of contact what I can have from the service technicians.*" Arising from the observation it is quite evident, that face-to-face conversations with the service technician where valuable for the customer, since they enabled to meet customer needs accurately, but also cultivate the mutual understanding and partnership. Witnessing the conversations, how the dialogue changed repeatedly from the maintenance issues to the day-to-day topics and joking made clear, that the service technician has to have proactive service attitude and strong communication skills. However, another respondent found that previous service technician's strict maintenance suggestions were rather arrogant. As a response, the respondent suggested that the service technician should understand more day-to-day circumstances on-site, rather than providing suggestions based purely on theory. Thus, the respondent expected certain degree of sensitivity and diplomatic wording, in terms of communication. In sum, factors discussed above are very much in line with Evans & Collier (2007) who suggest, that the service technician has to obtain good knowledge and technological expertise along with strong human interaction skills. In addition, the findings support argumentation from Chung-Herrera et al. (2004), who state that front-stage employees play a strategic role in value creating activities, because they often are the primary point of contact before, during and after a purchase.

## 7.4 Capabilities influence on relationship

One of the clear themes in the interviews and observations was, that the customer companies were likely to have the same service technician to support them in each of the service visits. Participant observation also made clear, that customer-service technician relationship was founded on continuous moments of interpersonal interactions, which had evolved during the time. While taking part of the service visits, it came out that customer recognized Outotec as a service provider, but also many times they knew the service technician personally. Depending on the customer, various customer employees recognized the Outotec service technician and quite easily the discussed about maintenance related issues. Correspondingly, all the respondents regarded, that there were long periods of interpersonal history between both parties and the personal relationship between customer and service technician had grown through years of collaboration. As a consequence, customer-service provider relationship is most likely to be personified on the front-stage service technician. This can be explained with the findings from Heskett et al. (1994), who find that when the service workers leaves the company, customer satisfaction level may seem too drop dramatically.

From managerial point of view, personification of the service relationship is a valuable finding and supports the argumentation from Aspara & Tikkanen (2008). According to the

author's customer's trust and commitment to the service technician may cause problems for the service company, for instance if the employee is replaced. Thus, reinforcing customer companies liking for the service company itself instead of merely its service technicians becomes important (Aspara & Tikkanen, 2008).

One respondent described the development of the relationship: "*We kind of grow on each other. Therefore it is nice to have same service technician all the time.*" All together, customer felt that there is a minimum turnover of service technicians between the service visits. Another respondent pointed out: "*The thing is that, we are building relationship with one service technician and we know what he is capable of.*" This tendency can be explained with practical issues. For instance, one respondent mentioned that new service technicians have to be kept under observation in order to ensure, that nothing unexpected does happen. In turn, familiar service technicians were more likely to enjoy significant degree of autonomy on-site. These results are very much in line with Coulter & Coulter (2002), who argue that trust between the customer and the service provider is likely to be greater as the length of the relationship extends.

From the customer's point of view, a familiar service technician was considered as a trusted person, which made interpersonal communication and interaction also more effective. Two of the respondent explained, that familiarity made it possible to solve problems together in conversational manner. Some of the respondents also regarded, that informal communication made ongoing communication much easier in face-to-face conversations, but also in phone discussions and email messaging. In an essence, most of the respondents mentioned, that face-to-face conversations were the most effective way for communication. Familiar service technician was also regarded to bring a degree of trust on board. One respondent pointed out: "*We do not have to coordinate and supervise service technician all the time, because we know what he is capable of.*" Similarly, among the respondents, it was also widely accepted, that through a well-known service technician support is easily accessible. Together these findings confirm Ford's et al. (2003) claim, that each interaction between companies from exchange of services to social interaction, is an episode in the total relationship between companies. Subsequently, this relationship is affected by what has happened before and what will happen in the future.

Based on the discussion above, it can be argued, that the magnitude of the relationship is most likely to lead to satisfactory service encounters. This can be explained, by familiarity and frequent moments of interaction bringing significant degree of trust on board. Similarly, mutual understanding is also likely to increase in long-term relationships, since the service technician is more exposed to the customer company's culture and personnel. Also customer companies' dependence on the specific service technician is likely to be higher, when service technician has been maintaining same equipment over the years.

## 7.5 Applying customer journey

### 7.5.1 Customer journey representation

Once the entire maintenance service consumption process was outlined the entire process was broken into smaller pieces by using customer journey mapping, based on the understanding of maintenance service (Appendix 5). Based on the fieldwork and academic theory, the delivery of the maintenance service was divided into three different phases: (1) pre service period, (2) field service and (3) post service period. Pre service period involves preparing activities for the service visits. Typically these involve contacting the customer, confirmation of the competence and training and data gathering. These can also be considered as back stage activities. Field service is the actual service visit, when the operation for the Outotec equipment is being performed. Finally, post service period completes the service process. This involves follow up activities, such as reporting and reporting calling.

### 7.5.2 Service guidelines

The starting point of this study was that the case company Outotec had a need for a solution for managing service encounters. As a response, the outcome of analyzing customer journey was a concept, which can be gradually developed by implementing existing best practices and customer insights. Further, the concept was decided to be flexible so that it can be implemented agilely across global Outotec service centers. As acknowledged in the beginning this commission was accomplished as a designer. Thus, the concept was built around customer human-centric ideas and methods of service design. This result was decided to be a handbook called service guidelines handbook, which provides common and standardized guidelines for the maintenance service process in the Outotec.

The service guidelines handbook is a general plan for practical service procedures in the service interface. These guidelines were designed to fit into service technicians day-to-day needs by providing support throughout the whole maintenance service process from preparation to follow-up. More precisely, the service handbook includes guidelines for preparation, site visit and follow-up of the maintenance service. In addition, desired customer experience is defined for each step of the maintenance service process, when customer interacts with Outotec. Especially, the preparation is considered important, because all of the factors affecting on actual service activities are dealt during this phase. The field service visit introduces determined procedures for how the communication and repetitive routines should be carried out on maintenance service visits. The follow-up part of the handbook provides guidelines for aftercare activities necessary to foster and cultivate the customer relationship. Also new interaction models and behavioral patterns were proposed according to the knowledge from the fieldwork.

Essentially, the new service guidelines handbook is intended to make it easier for a service technician to anticipate the service visit and carry out necessary procedures in

order to excel on on-site during service encounters. In this sense, the management of the service encounters can be expected to be more systematized and unified. As are result, it can be estimated, variation in service encounters to be more balanced because of the guidelines. This is because, necessary corrective actions be carried out soon after the service visit. This hypothesis is illustrated in Figure 12 in very simple and general way. In addition, the new handbook is argued to support the cultivation of the maintenance service process towards a more customer-orientation, since customer expectations are directed and emphasized on each step in the maintenance service process. In the end, new service guidelines are to be integrated with the more extensive service delivery model at Outotec.

Since contents of these guidelines and customer journey map are very detailed and thus also very confidential, it is impossible to include a full copy of these guidelines. Finally, as Valtonen (2007) points out, that the role of a designer has evolved during the years, the guidelines as a design output also demonstrates how the role of designer is moving from tangible artifacts to intangible questions such as processes and experiences.

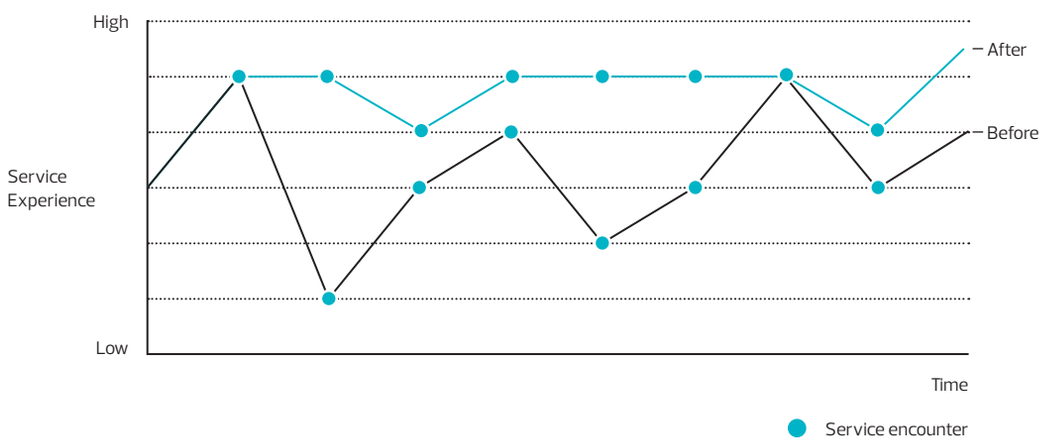


**Figure 13.** Estimation of the effects of the service guidelines.

## 7.6 Summary of the research findings

In this chapter it was found that, rather than viewing maintenance service as outcome consumption it should be acknowledged as process consumption. Therefore, it is noteworthy, that each of the service encounters during the maintenance service process are perceived and evaluated by the customer in a number of different ways. In order to overcome the potential pitfalls in service encounters, it was suggested that significant degree of attention should be put on service technician's equipment and service knowledge as well as interpersonal communication skills. It was also argued, that there is a move to build long-term service relationship between the customer and the service provider. Thus, satisfactory service encounters mostly likely tend to foster the customer relationship and

cultivate trust between the customer and the service provider. Finally, according to the knowledge from the case study service guidelines handbook was presented for Outotec. The service guidelines handbook was argued to be capable of offering extensive support for a service technician in maintenance service process and managing service encounters.

# 8 SUMMARY AND CONCLUSIONS

The final section of this study presents the conclusion of the research findings. First section presents a summary of the research. Next, based on the research findings concise and explicit answers to the research questions are presented. After that, managerial implications are suggested by emphasizing service encounters. Then, suggestions for service design professionals are provided. Last, limitations of the study are described and suggestions for future research are given in the end of this section.

## 8.1 Research summary

The objective of this study was to investigate service encounters by using customer journey method in the context of Outotec maintenance services. The research was based on the service consumption model of services that customer companies carry out during the single maintenance service visit. The research data of the empirical part of the study was collected by utilizing semi-structured interviews and participant observations. Together these research methods provided significant amount of data about service encounters and customer-service technician interactions.

Theoretical review showed that a central part of service design and marketing is based on the fact that consumption of services is based on process consumption rather than outcome consumption. Service was defined based on four basic characteristics: intangibility, heterogeneity, inseparability and perishability. As a response, customer journey as a service development method was introduced. Further, it was stated that in service design a great emphasis should be put on customer experiences, customer-service provider interactions and customer co-production efforts. On theoretical sense, it was also found, that there are lot of common parallels between service design and service marketing literature. For instance, it is likely evident that concepts such as service encounters and service touchpoints are more or less synonyms adopted by scholar and practitioners to describe interactions between the customer and the service provider in a virtual or a physical context. In this sense, perhaps the most sensible way would be to start discussing about "total service design thinking" by joining theoretical contributions from the fields of service design, service management and operations management. This requires, however, a great deal of time and collaboration across disciplines.

The empirical part of the study made it possible to establish overall picture of the front-stage activities and visible elements of the maintenance service. Based on the direct interviews and participant observation it was found out, that actual discrete

service actions on-site were regarded somewhat predicted as a very important part of the overall maintenance service process. Unsurprisingly, there was no distinct evidence about customer awareness of the pre-service stages, except phone conversations, email messaging and face-to-face discussions. Although, customer companies tend to appreciate careful preparation and anticipatory activities, they do not substantially regard invisible support functions. It was identified, that the customer companies tend to appreciate excellence on technical service and straightforward interpersonal interaction, between the customer and the service technician. Ingredients of satisfactory maintenance service process were safe working, acceptable maintenance service work, proactivity and flexibility and well-established ongoing communication. These in turn establish a solid basis for satisfactory service encounters. It was also identified, that success of the maintenance service process correlates with the availability and pricing of the spare parts. Oppositely, the study revealed that customers are expecting explicit documentation and reporting after visit. Ultimately, the lack of proper documentation can be a threat to the continuity of the service relationship because the customers are most likely to assess reporting as an incremental part of the service process.

## 8.2 Answers to research questions

In particular this research addressed three questions to understand the relevance of the service encounters in the Outotec maintenance service process. Together the results of the literature review and the empirical study were used to give answers for these research questions. In the following the three research questions are answered separately.

Theoretical findings of the literature review incorporate with empirical findings gave an to answer to the first research question:

**How could Outotec unify its practices and process during service encounters through customer journey mapping?**

All activities and interactions during the service process affect on customer perceptions and assessments of maintenance services. Based on the study, it is evident, that there are dozens of frequent service encounters in which customer interacts with Outotec and their service technicians, from the telephone conversation with a service technician to interpersonal face-to-face interaction. Subsequently, all these interactions between the customer and Outotec are perceived in a number of different ways, which ultimately affect on customer's service experience. As a response, customer journey can be utilized in identifying critical service encounters between the customer and Outotec. Once these service encounters are fully analyzed, necessary improvement ideas can be designed and the specific service encounters can be grouped into sets depending on their role in the maintenance service process. For instance, in this study different service encounters were categorized into three different sets by following critical phases in the maintenance

service process: preparation, field-service visit and follow-up. Also, for a each set of detailed instructions and standards were provided in order to meet customer expectations. More precisely, complementing customer journey mapping with participant observations and interviews, it was possible to gather critical information and define characteristics, which are important for customers, and which they want to be associated with the Outotec as a maintenance service provider.

Secondly, the empirical part of the study answered to the second research question.

**What are the critical and satisfactory components in frequent service encounters within Outotec maintenance services?**

It was found that excellent equipment and service knowledge mostly sets a basis for well-defined and expected service process outcomes. In this sense, service technician should be capable of working independently and establish mutual understanding with the customer. Based on this study, it can be generalized, that the level of equipment and service knowledge should be so excellent, that the customer company does not have to stress themselves by providing supporting workforce and/or other resources. Importantly, other significant factor affecting on satisfactory service encounters was defined to be service technician's interpersonal skills. It was found, that the service technician should obtain strong communication skills and proactive service attitude in order establish ongoing information flow and to fully provide solution to customer's problems. In addition, there should be certain degree of sensitivity and diplomacy for instance in maintenance suggestions, in order to avoid embarrassing situations and negative word-of-mouth. It is noteworthy, that lacking in the ongoing communication can cause increased lost of trust. Respondents also described that continuity in service relationship is a significant component in service experience. Ideally, customer companies were most likely to have same nominated the service technician in each service visit. From management perspective this raises the fundamental question: how to train service technicians and allocate resources so, that the maintenance service process is simultaneously customer-oriented but also efficient and effective. For instance, how to orchestrate maintenance service process in the cases of substitution or replacement with the highest level of quality, in order to maintain the consistency in service experience?

Finally, in the last part of the study the service guidelines handbook was presented. The new handbook was the final manifestation of this study and it gives an answer to the third research question of this research.

**How could Outotec develop frequent service encounters by utilizing customer journey as a service design tool?**

As a conclusion of this study a new service handbook and customer journey map was proposed / introduced according to the knowledge from the case study. The behavioral

models and interaction patterns were developed according to the theoretical knowledge and the empirical study. In the development process customer journey was leveraged as a design methodology. Customer orientation was taken into consideration by observing the actual service operation and activities in customer facilities. Further, according to interviews and participant observations, customer journey was illustrated in order to outline the maintenance service process from the customer perspective. However, it is noteworthy, that in this case customer journey established a human-centered platform for transforming ideas and insights into the final solution. Therefore, it can be argued that customer journey itself should not be regarded as a final outcome from the design process. In the end, customer journey was transformed into a maintenance service process description. This description was utilized in analyzing and evaluating the maintenance service process as well as identifying gaps for improvement. Also service process is expected to diminish variation especially in the maintenance service encounters. This is, because there are clear and systematic sets of actions and guidelines necessary to conduct service activities and interactions during different 'moments of truth' within maintenance service process.

To conclude the research, the findings of this study suggest that customer companies perceive maintenance service activities as an output of the service process. Accordingly, well established series of service encounters in the maintenance service process may lean towards customers overall satisfaction. Notably, service encounters are highly based on service technicians' activities, interpersonal interaction behavior and performance in the context of the maintenance services. Therefore, in order to achieve solid foundation for long-term service relationship, establishing continuity and consistency between service encounters is critical.

## 8.3 Managerial implications

Arising from the study, there are three actions in particular, which should lead to an improvement of service encounters. Foremost, service companies should recognize the significance of the service encounters, also in the context of mining and metallurgy. Based on this study, it was understood, that customer companies assess and perceive maintenance service as a process, whereas the output of the maintenance service is their primary concern.

First, Outotec could concentrate on training their contact employees in order to achieve consistent and unified service encounters across different market areas. Rather than focusing only technical activities, service technicians should be encouraged to adopt consisted interpersonal skills such as attentive listening and conversational communication by acknowledging customer concerns and expectations. Furthermore, service employee's day-to-day competence would also benefit from marketing skills for cross selling, but also on persuasion strategies, in order to overcome moments of conflict. Finally, it is upmost important, that service technicians are being competent of creating

good relationships with customer, through effective service encounters.

Second, the results of this study highlight the importance solid relationships between the customer and the service technician. Service organization should cultivate service encounters in order to expand relations with the customer companies. Front-stage employees establish ongoing communication with the customer Similarly it is highly important to have predictive action plans in the cases of substituting. It is worth of notifying that, through the continuous visits and on-going face-to-face meetings, trust and loyalty can be fostered. Subsequently, service provider is more capable to understand customer company's day-to-day culture and industrial processes. In this sense, it is important for service technicians to visit physically on customer facilities at regular intervals and maintain the ongoing communication flow. Furthermore, service managers need to accept, that customers are most likely to buy relationships along with the core maintenance service. Thus, it can be argued, that competent contact personnel are the most crucial resource for the service provider.

Third, there should be a clear plan how to facilitate service encounters and employee-to-customer interactions. Rather than directing their management efforts only on technical output of the maintenance service process, service managers could focus on standardizing repeating routines and customer orientation, at each stage of the maintenance service process. In fact, frequent customer-service technician interactions and level of customer co-production efforts should be bundled as an integral part of technical maintenance, when developing the service offering. Following this, there should be strict concept how service encounters should be carried out. Subsequently, this concept should be planned out in all service organization units across market areas. In order to overcome presumable change resistance and integrating existing best practices, the front-stage service technician should be involved in the development process, rather that developing concept on isolation. In turn, this is also good opportunity to take service design co-creation methodologies into consideration.

## 8.4 Implications for service design

In the beginning of this study it was stated that manufacturing companies have started thinking "humanistically", in order to reach full potential of their service organizations. However, since industrial services are more or less bundled with equipment, it can be argued that service designer has to adopt a light technocratic way of thinking. In order to tap the sources of industrial services, service design professional should obtain certain level of knowledge about industrial equipment, machinery and their correlation to the service portfolios. Furthermore, service design professional has to recognize the business landscape at hand and the fundamentals of its value making activities.

On a practical sense, the study also revealed further ideas for expanding customer journey as a service design methodology. As service development should be customer-

oriented, customer journey is an appropriate methodology, which describes the journey and experiences of the customer by representing different touchpoints. Because of this characteristic, it can also be also utilized in identifying different stakeholders in the service process. For instance, in business-to-business context customer the journey can be utilized in identifying different organizational buying centers, which affect on service investments. Thus, the customer journey should be regarded comprehensively, rather than paying attention only on tangible service dimensions on service interface. Finally, in order to fully benefit from the customer journey map, it should be complemented with a service consumption model. In this way it is possible to break down the service process in the central phases such as the joining phase, the intensive phase and the detachment phase. Such breakdown model of a service process allows to identify what kind of activities exist in each of the phases and help to determine their importance of the overall service process.

## 8.5 Limitations of the study and suggestions for further research

As this study was carried out only in two market areas Finland and South Africa, and findings are very specific for Outotec, results cannot be generalized too much. Consequently, by comparing maintenance services between different service providers, the results could be more applicable. Most importantly, although the study was based on only five cases, more evidence across different market areas is required to assess the full generalization potential.

Altogether, this study revealed a number of interesting areas for further research. One potential idea for future research could be to explore more deeply different actors involved in the service consumption process, which was only briefly referred in this study. This would help to make a consistent picture of different organizational parties, their roles and needs in after sales activities. Another opportunity for further investigation is the service recovery plans, in order to improve and enhance damaged customer relationships. More research on service failure situations would help to overcome dissatisfactory service encounters and would serve service organization shaping better services further. Finally, further research could also investigate and evaluate supporting backstage service elements such as staffing and technology, in order to move customers efficiently through the maintenance service process.

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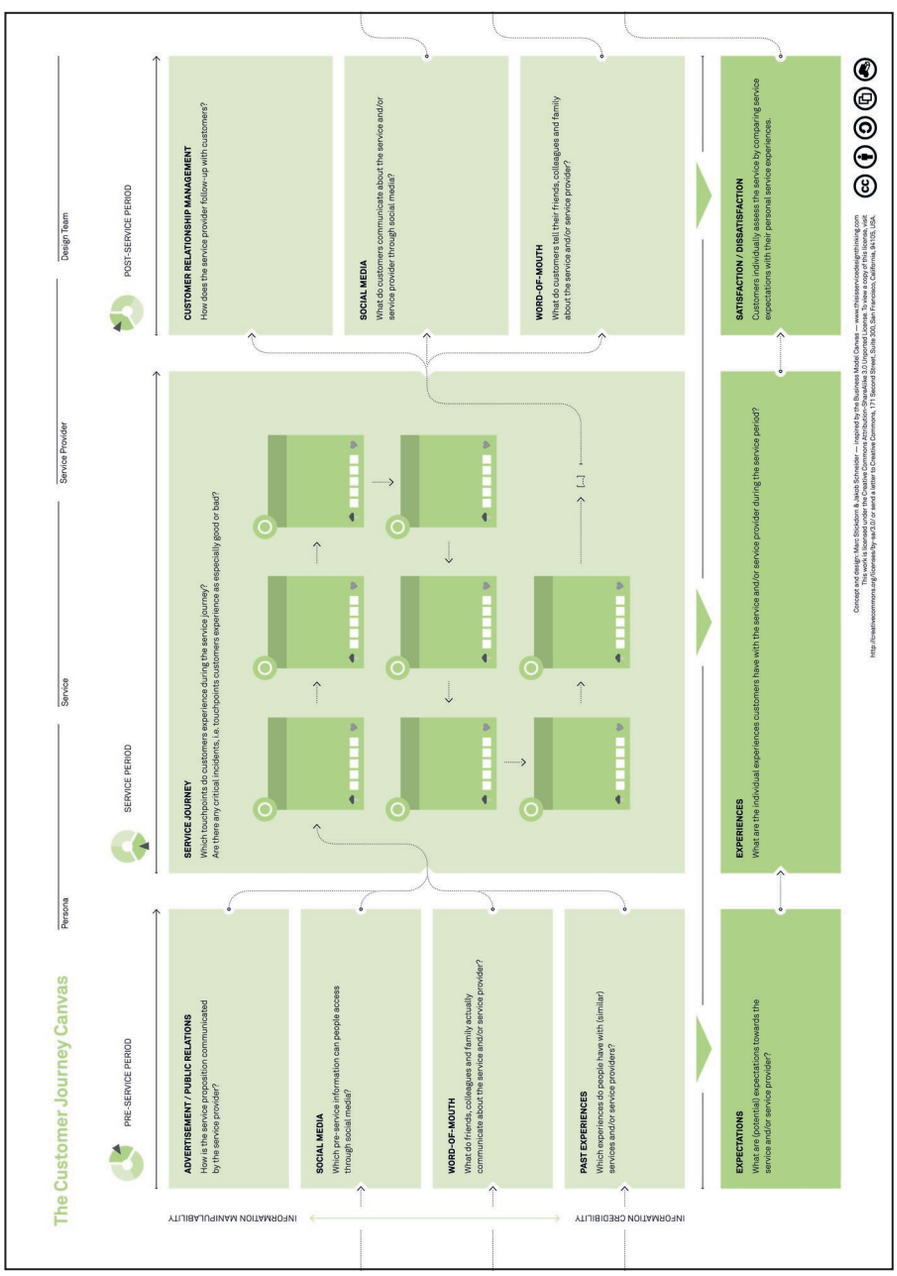
# APPENDICES

**Appendix 1.** Customer journey template (Source: Stickdorn & Schneider, 2010).



**Appendix 2.** Cover letter for interviewing.

**TO WHOM IT MAY CONCERN**

The study, which is about to start focuses on customer experiences in *Outotec Maintenance Services*. In order to prevent customer relationship vulnerability, the study strives to deliver representations for functional service conventions and practices. In doing so, the study examines from theoretical and practical angle, different service interactions and their degree of complexity.

Simultaneously, the study works as masters' thesis for *Aalto University, School of Arts, Design and Architecture*. The project owner in Outotec is Senior Manager **Sebastian Storbacka** from Service Product Management. In the role of thesis supervisor is Prof. **Markku Salimäki** from the *Aalto University, School of Economics*.

To examine customer experiences and expectations from real world perspective, the study will cover fieldworks in customer plants in Finland and South Africa. Furthermore, these fieldworks will emphasize participant observation of typical customer interactions and encounters during maintenance service activities and operations. Along with the participant observation, the study will cover semi-structured interviews with Outotec's customers, in order to supplement the observation findings. In regional sense the interviews follow similar logic than field study itself, covering customers from Finland and South Africa.

The overall outcome of the study is a visualized customer journey map, which portrays different service interactions and customer contacts. By identifying best practices in Outotec maintenance services, customer journey map can be leveraged to locate areas for service standardization and commercialization. In summative role, the study will benefit Outotec by delivering sensible directions on how to interact with the customers in frontline situations within Outotec maintenance services.

Best Regards

*Mikko Kutvonen*
Diploma Student, Service Business Area

**Appendix 3.** Interview questions.

**Background**

- Describe little bit about your background?
- What is your role and responsibilities?
- How long have you been working on this type of business?
- From your point of view, what does Outotec maintenance services mean to your company?
- How long you and your company have been using Outotec maintenance services?
- What kind of experiences you have from Outotec maintenance services? Are you satisfied?

**Service process**

- From whom you receive information about need of maintenance service?
- With whom you arrange the conduction of the maintenance service? Who is your contact person in Outotec?
- Is it necessary to ask approval for the maintenance service visit?
- If you answered yes, from whom?
- Where you look information about Outotec before the actual maintenance service (Internet, brochures, other)?
- What is the process in the performance of the Outotec maintenance services (e.g. preparation, core maintenance service, reporting)? Are they appropriate for your need?
- How would you evaluate different kind of service encounters in the context of Outotec maintenance services (e.g. before, during and after)?
- How important there are in the service experience?
- Do you receive any material during actual maintenance services (brochures, business cards check-up lists)?
- If you answered yes, what kind of material?
- To whom you tell about service experiences after the actual maintenance service?

**Service quality and expertise**

- Within Outotec maintenance services, which things factors on success of performing maintenance service (e.g. service performance, health and safety, working hours)?
- How important they are to you and your company?
- In your opinion what is criteria for successful/failed maintenance service?

- How you see your own role in the performance of Outotec maintenance service?

**Service availability and flexibility**

- Do you think that you receive in enough resources within maintenance services from Outotec upon at (e.g. urgent and critical situations)?
- Have there been any urgent or unexpected situations within Outotec maintenance services (e.g. sick leaves, accidents, extra works, malfunctions, failures etc.)?
- How these issues have been handled?

**Service environment**

- In which ways, working environment have been take into account within Outotec maintenance services (e.g. tidiness, cleaning, tools and equipment, regulations, safety issues)?

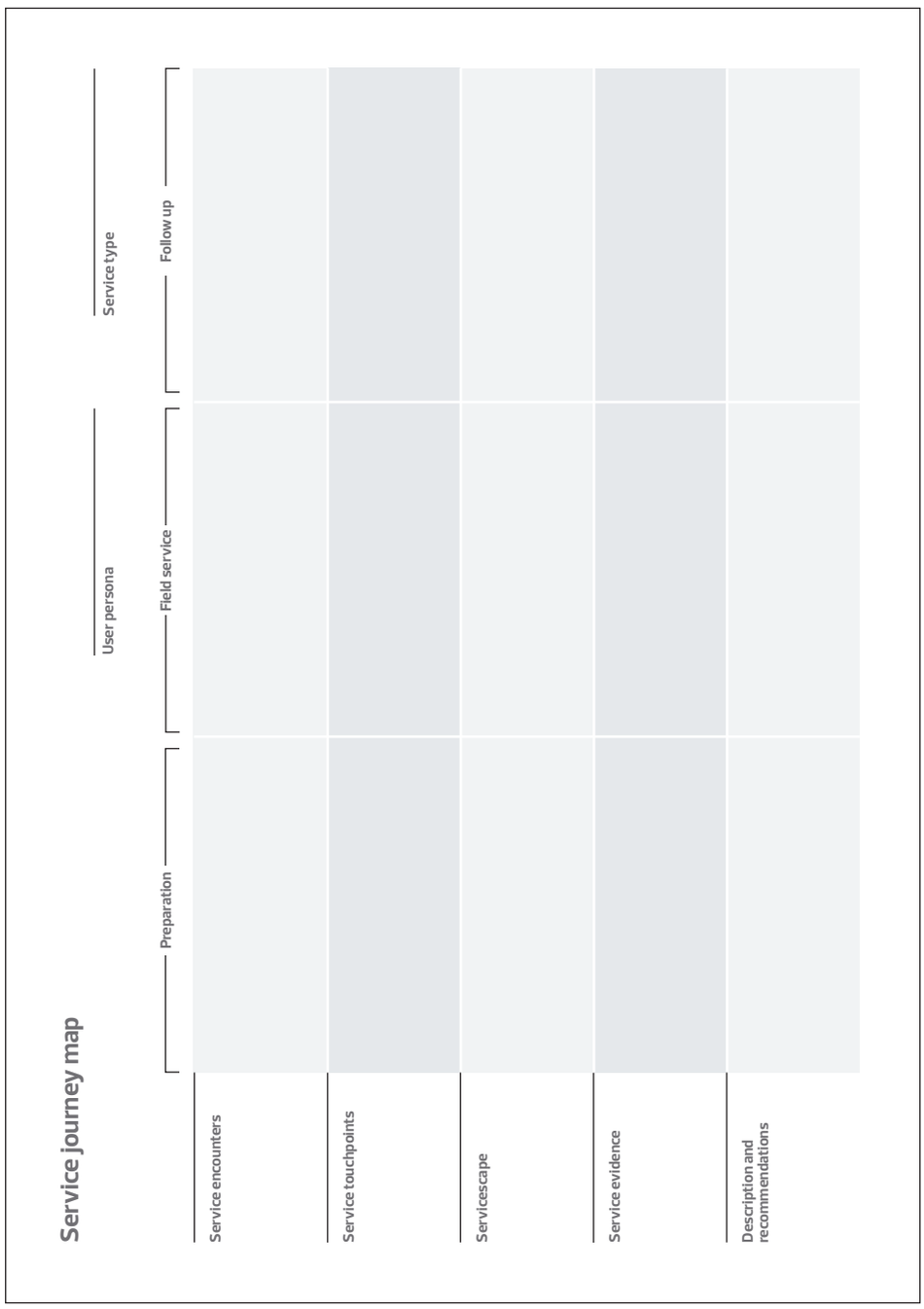
**Service technician**

- In which ways Outotec service technician can be recognized in the worksite (e.g. behavior, visibility, attitude, work outfit)?
- From your perspective, what are the main qualities of a competent Outotec service ´ technician?
- How does the cooperation between you and Outotec service technician take place (e.g. collaborating with other subcontractors, regulations, and supervision of work)?
- Service attitude and behavior
- From your perspective, is Outotec service technician proactive enough?
- Is the solution being found out to your problems?
- Does the Outotec service technician keep his promises?
- Does Outotec service technician pay attention to different kind of situations (e.g. hurry, errors by the customer, requests and questions)?
- In which ways Outotec service technician is contact with other contractors?

**Other issues**

- Could you name three most critical challenges in the conduction of the maintenance service process?
- Are there some improvement ideas or areas of development, regarding Outotec maintenance services?
- Further considerations (if you like to add something or if you want to introduce something else that was not asked above)?

**Appendix 4.** Customer journey template.



**Appendix 5.** Representation of customer journey.